Altlantis/Apollo Block Diagram

PCB STACK UP

- LAYER 1 : TOP
- LAYER 2 : SGND1
- LAYER 3 : IN1
- LAYER 4 : IN2
- LAYER 5 : VCC
- LAYER 6 : IN3
- LAYER 7 : SGND2
- LAYER 8 : BOT

RUN POWER SW PG 36,37

AC/BATT CONNECTOR PG 34

BATT CHARGER PG 34

CPU VR PG 38

DC/DC +3VSUS +5VSUS PG 33

Turion64 Sempron
25W/35W
AMD Socket S1 638P
PG 2,3,4

DDRII-SODIMM1 PG 5 — *DDRII 667mhz*

DDRII-SODIMM2 PG 5 — *DDRII 667mhz*

HT Link

nVIDIA C51M/D
Integraded VGA Function
468PIN
PG 6,7,8

PCI-E

Mini PCI-E Card
PCI Express Mini Card
(Wireless LAN/WAN) PG 27

Express Card (NEW CARD) PG 28

SIM CARD PG 27

PCI-Express 16X

NVDIA G3-64 for 15.4"
NVDIA G3-128 for 17"
Graphics PG 9,10,11,12,13,14

Option for 17" only
HDMI CON PG 18

TV_OUT
CRT_OUT
CRT/S-VIDEO PG 19

LVDS(2 Channel)
Panel Connector 15" / 17" PG 18

Cable Docking PG 31
- TV_OUT
- VGA
- RJ-45
- CIR/Pwr btn
- SPDIF Out
- Stereo MIC
- Headphone Jack
- USB Port
- VOL Cntr

HT Link

CLOCK INTERFACE

Option for 17" only

SATA - HDD PG 28 — *SATA2*

SATA - HDD PG 26 — *SATA0*

PATA- CD-ROM PG 26 — *PATA (66/100/133)*

nVIDIA MCP51M
508PIN
PG 15,16,17

USB2.0

Bluetooth PG 28

USB2.0 I/O Ports X3 PG 26

Camera 1.3MP PG 23

Mini PCI-E Card x1
Express Card x1
Cable Docking x1

PCI BUS / 33MHz

LAN

Azalia

REALTEK
RTL8201CL (10/100)/ REL8211B (10/100 /Gigabit)
PG 20

RICOH
RICOH 832
PG 21

RJ45 PG 20

IEEE1394 CONN PG 21

Memory CardReader PG 22

Conexant
Venice AMOM
CX20549-12
PG 23

Two-element microphone PG 23

Audio Jacks (Phone/SPDIF/ MIC) PG 23

LPC

Keyboard Touch Pad PG 29

CIR PG 23

Capacitive Sense SW PG 29

ENE KBC
KB3920 Bx
PG 30

X-Bus

FAN PG 31

Flash PG 30

AUDIO Amplifier PG 25

Jack to Speaker PG 25

MDC DAA PG 24

MODEM RJ 11 PG 20

VAULE DEFINE
A=0603,B=0805,C=1206,F=1%,
OTHER IS 0402

EXAMPLE
10R=10ohm(0402)
10A=10ohm(0603)
10B=10ohm(0805)
10C=10ohm(1206)
10/F=10ohm(0402 and 1%)

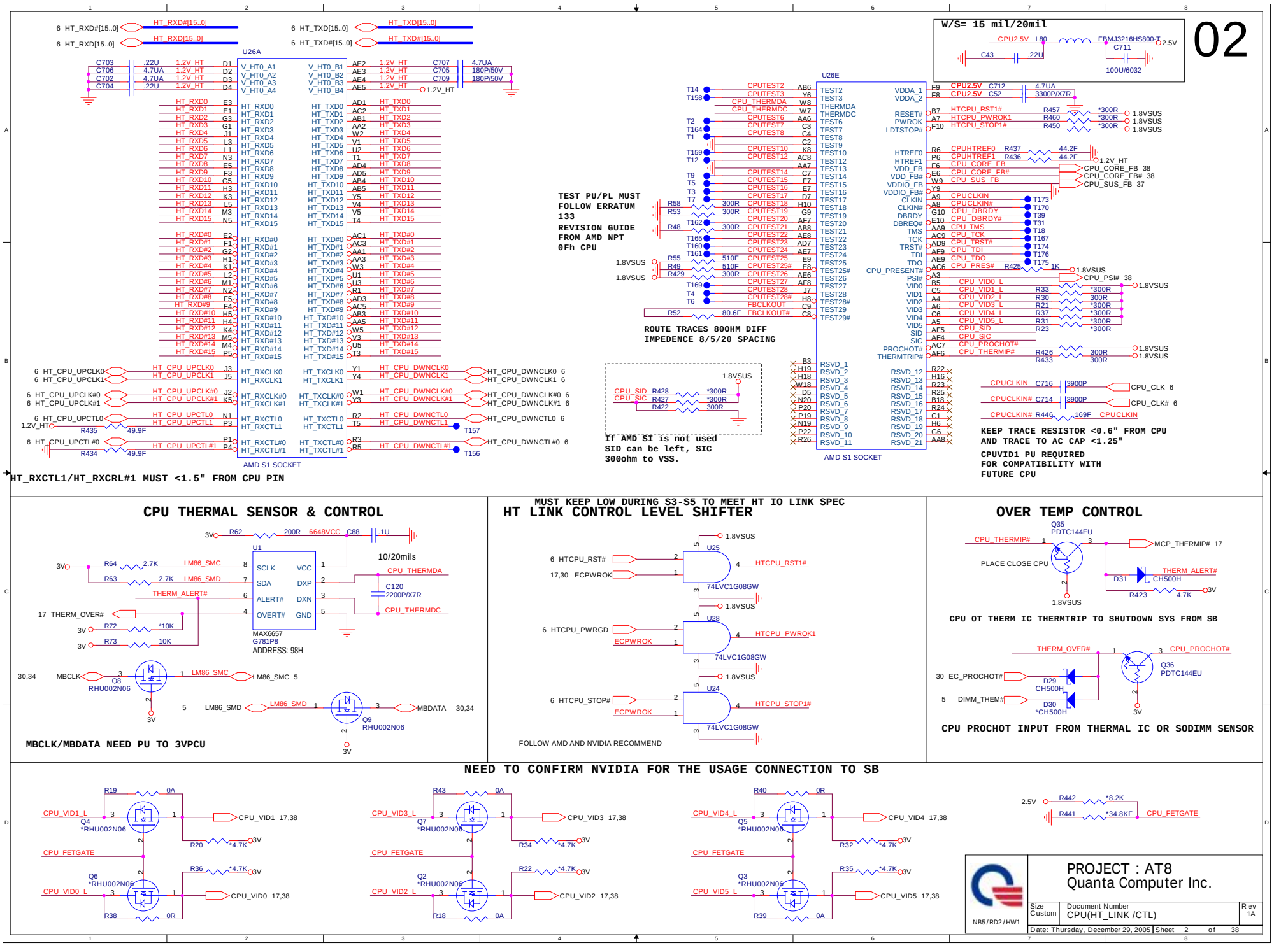
PCI ROUTING TABLE	IDSEL	INTERUPT	DEVICE
REQ0# / GNT0#	AD21	INTA#,INTB#	RICOH832

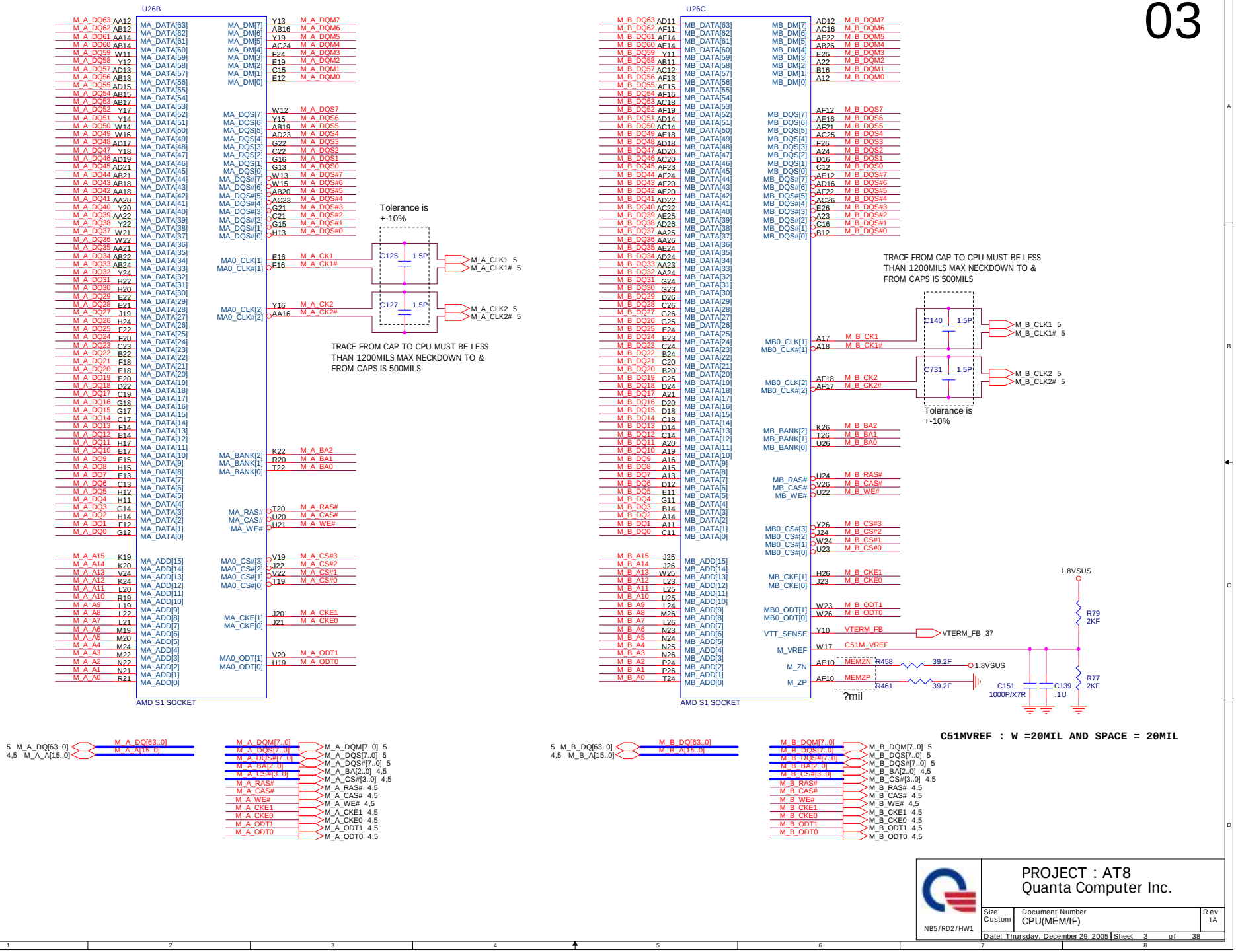
PROJECT : AT8
Quanta Computer Inc.

NB5/RD2/HW1

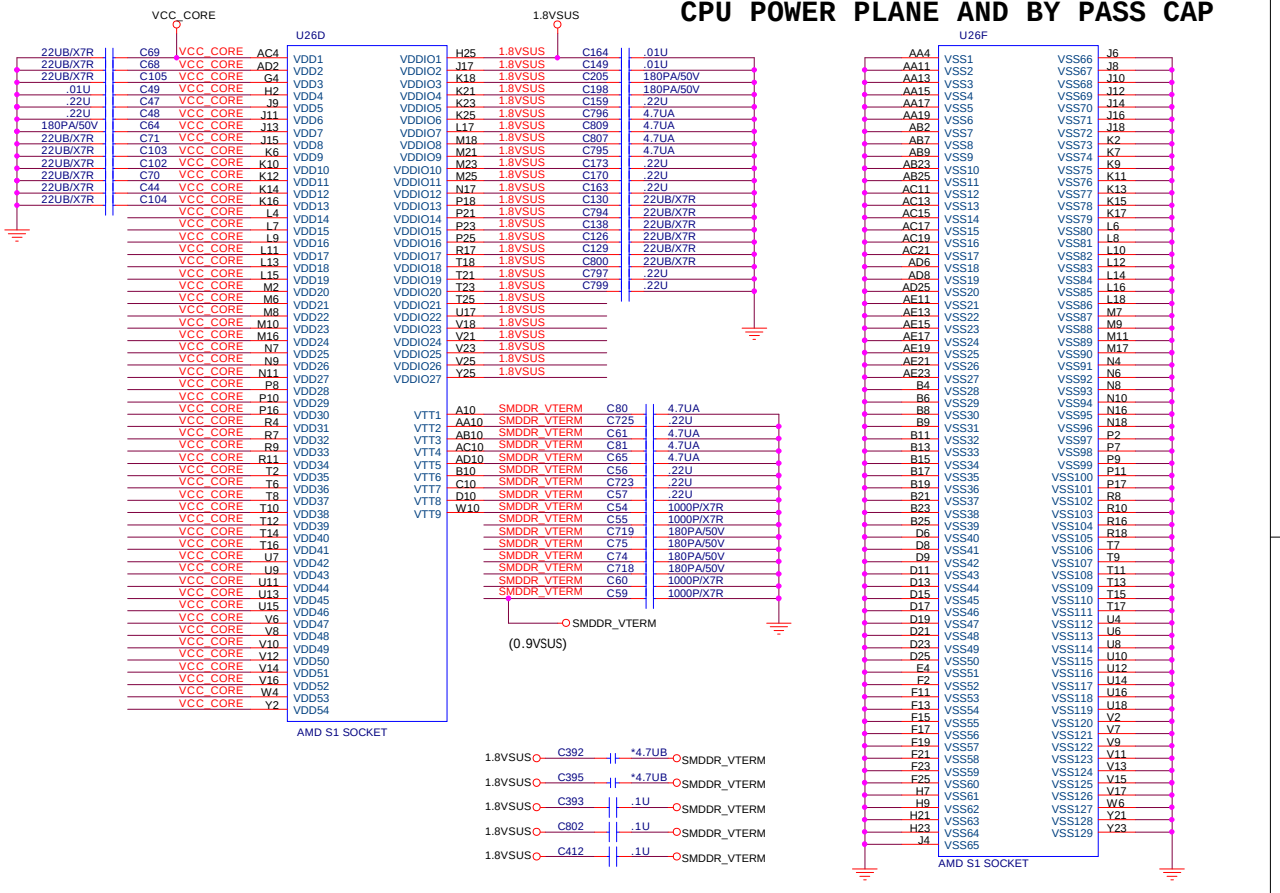
Size: Custom | Document Number: Block Diagram | Rev: 1A

Date: Thursday, December 29, 2005 | Sheet 1 of 38





CPU POWER PLANE AND BY PASS CAP

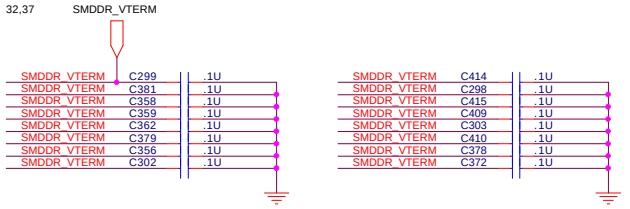


DDR2 TERMINATION BYPASS CAP

04

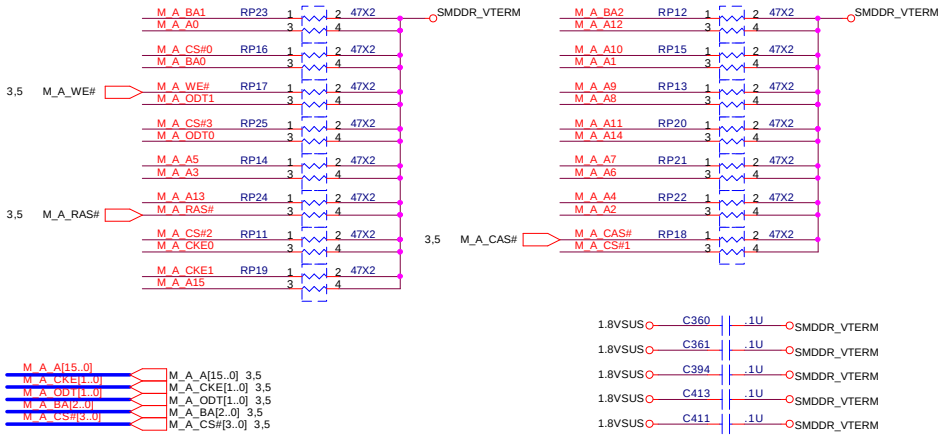
CHANNEL A

CHANNEL B

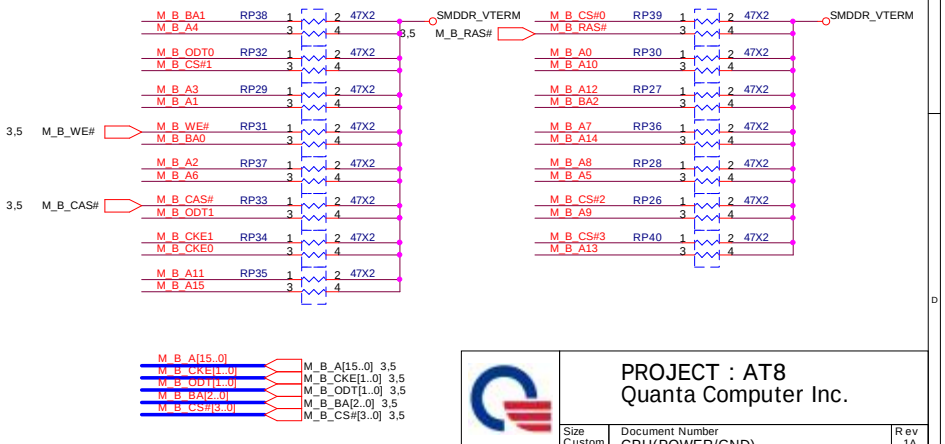


Layout note: Place one cap close to every 2 pullup resistors terminated to SMDDR_VTERM

DDRII CHANNEL A TERMINATION



DDRII CHANNEL B TERMINATION

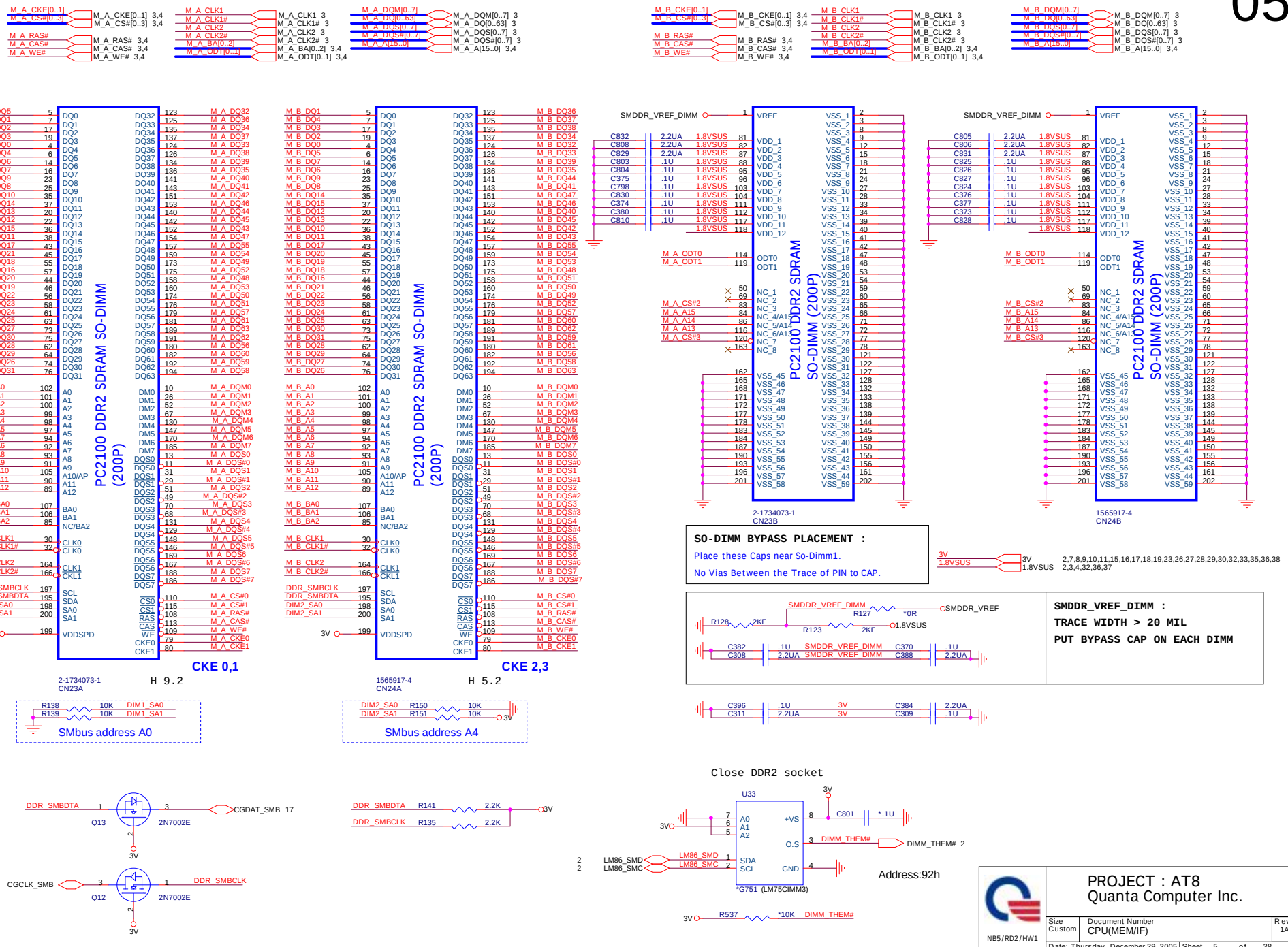


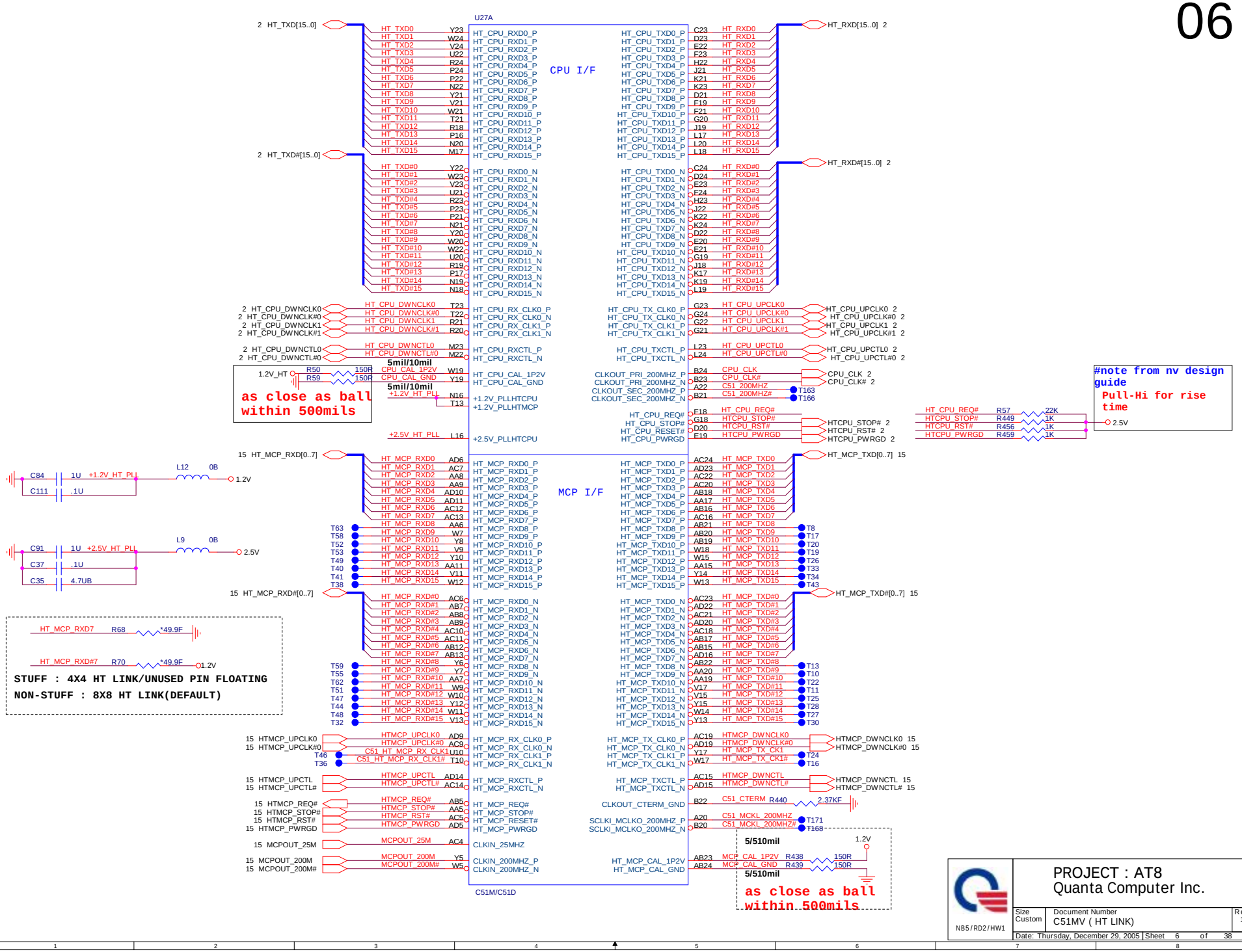
NB5/RD2/HW1

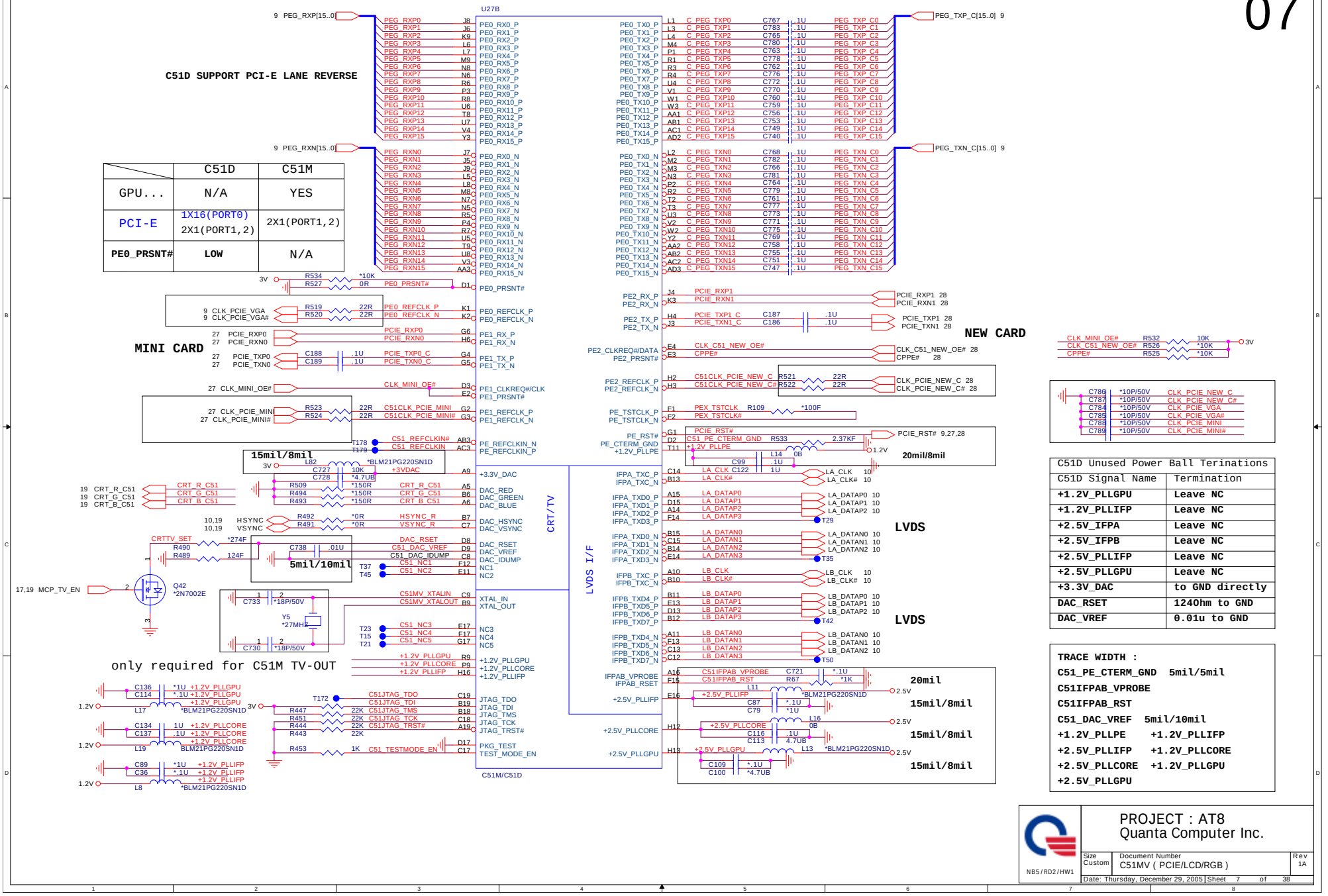
PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	CPU(POWER/GND)	1A

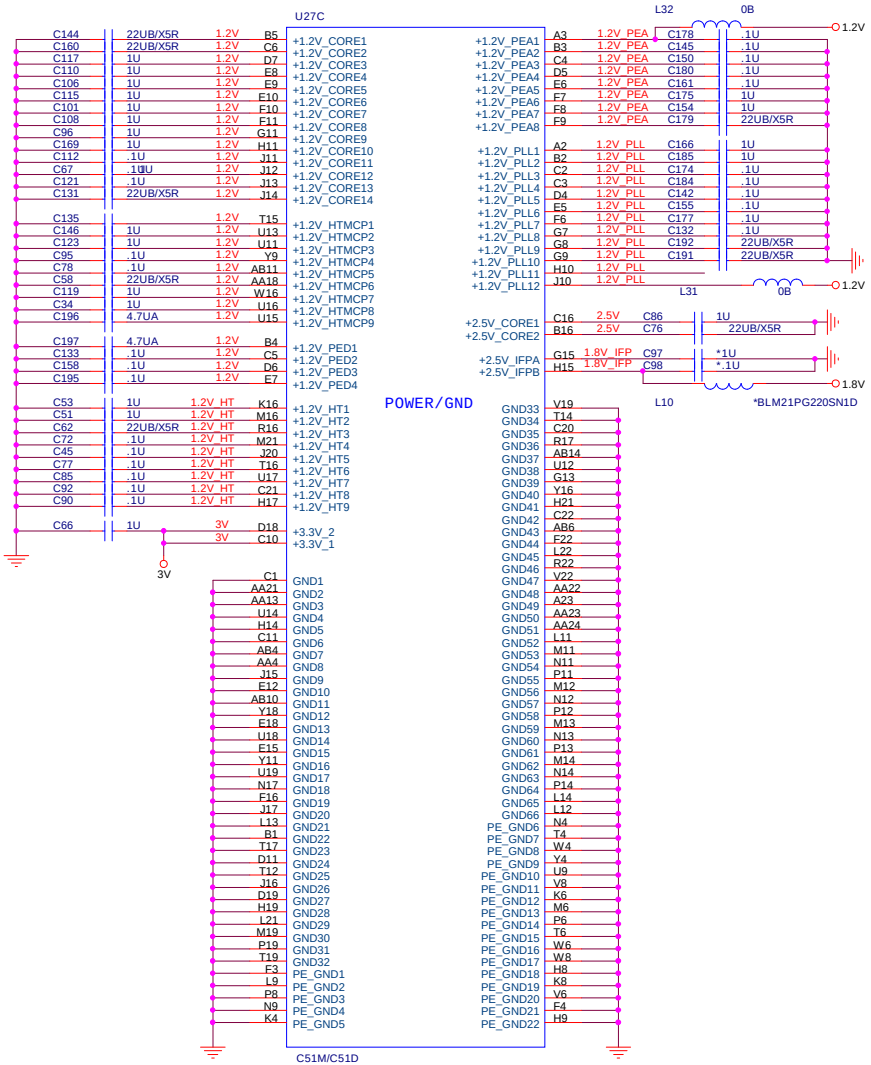
Date: Thursday, December 29, 2005 Sheet 4 of 38

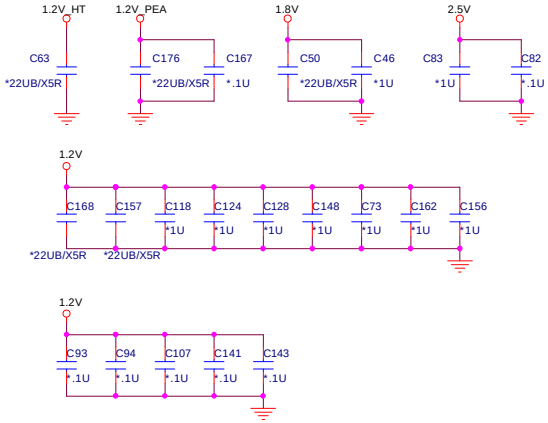




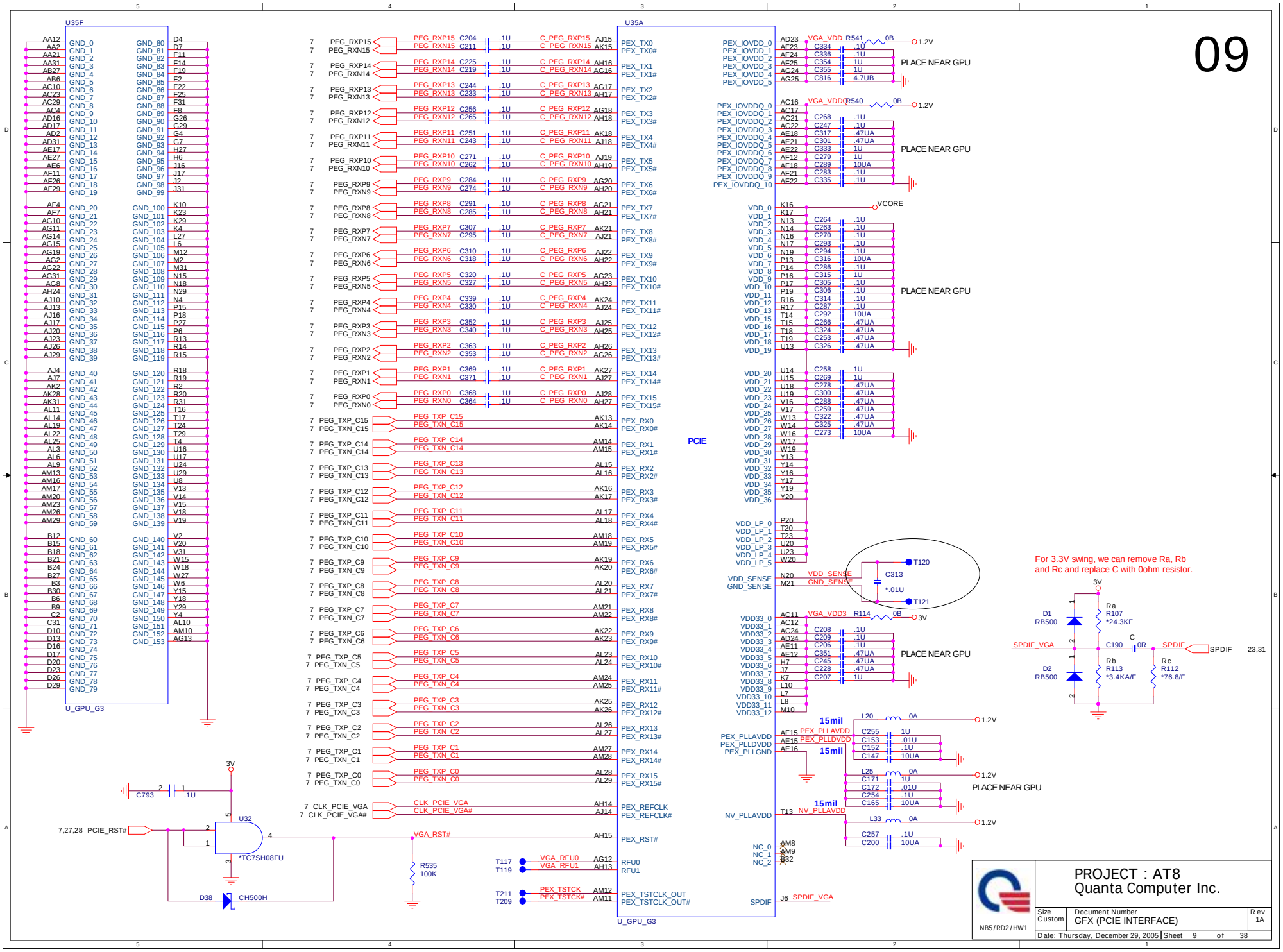


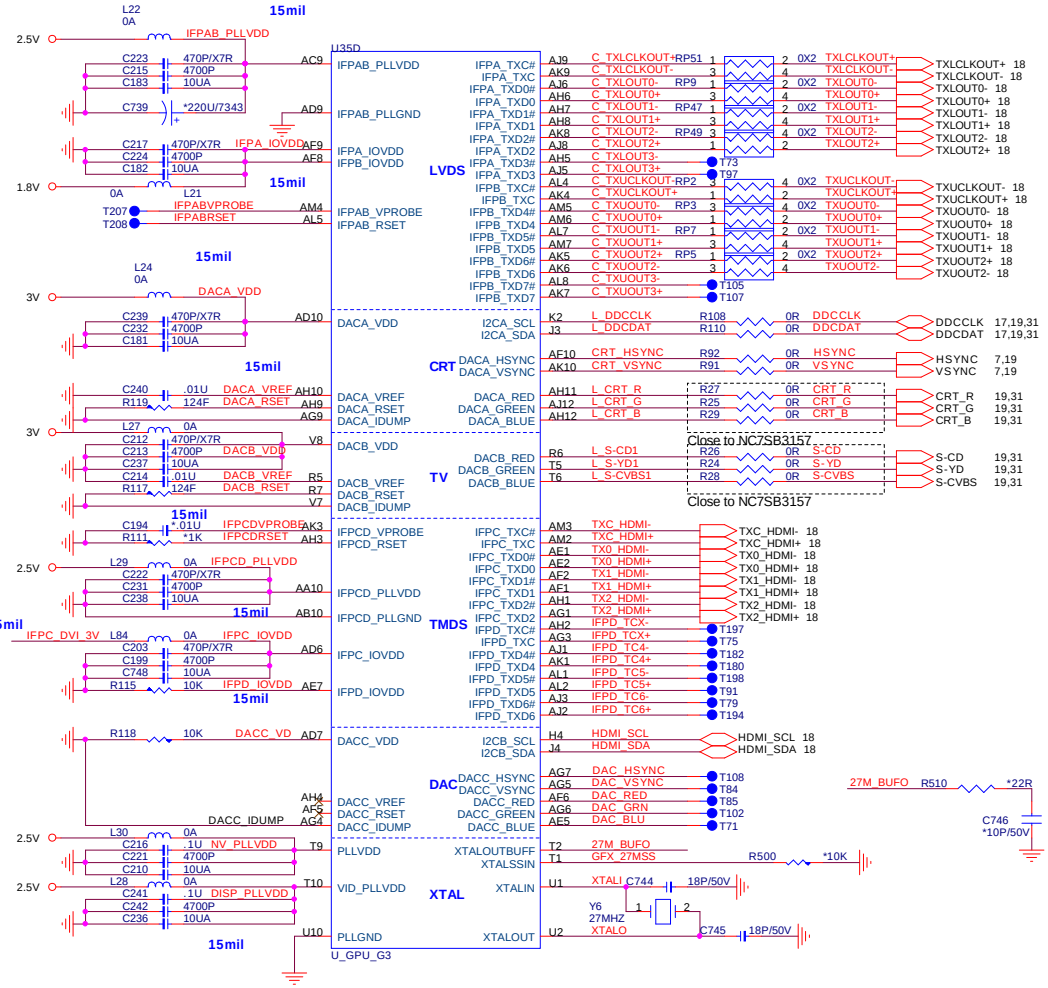
C51M/C51D POWER PLANE/GND & BYPASS



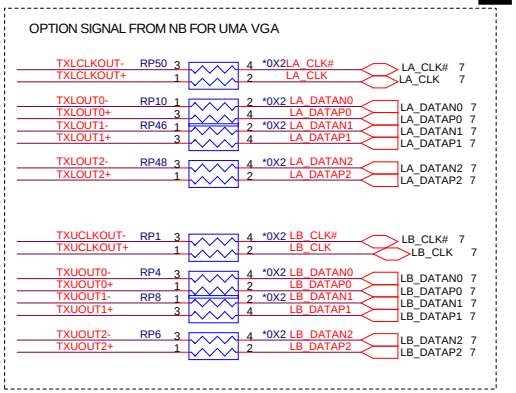


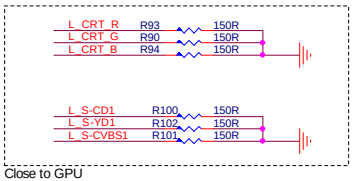
PROJECT : AT8	
Quanta Computer Inc.	
NB5/RD2/HW1	Size: Custom; Document Number: C51MV (POWER/GND); Rev: 1A
Date: Wednesday, January 11, 2006	Sheet 8 of 38

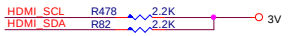


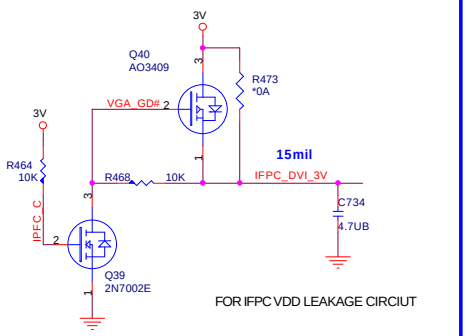


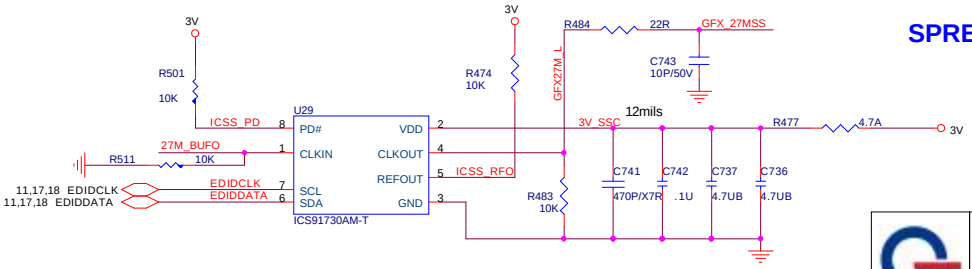
OPTION SIGNAL FROM NB FOR UMA VGA











I2C ADDRESS: 0xD4H

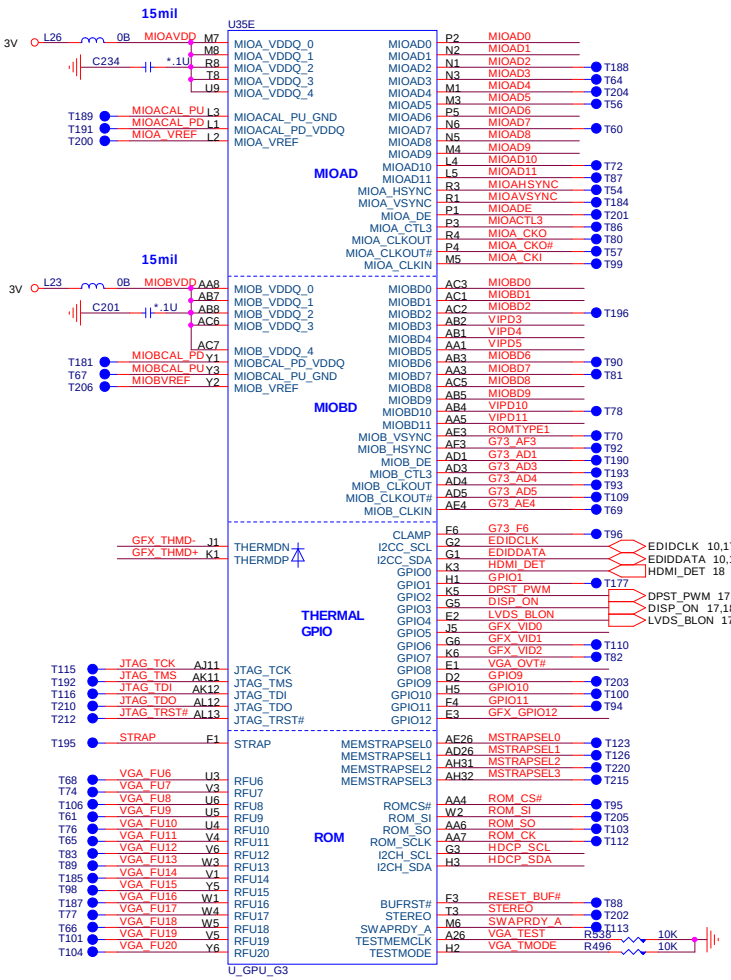
SPREAD SPECTRUM

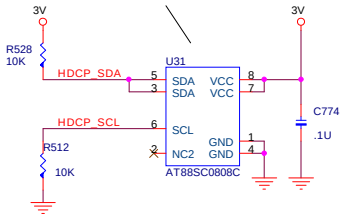
PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	GFX(LVDS, CRT, TV)	1A

NB5/RD2/HW1

Date: Thursday, December 29, 2005 | Sheet 10 of 38

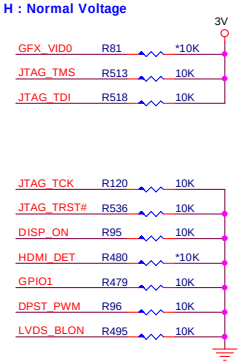


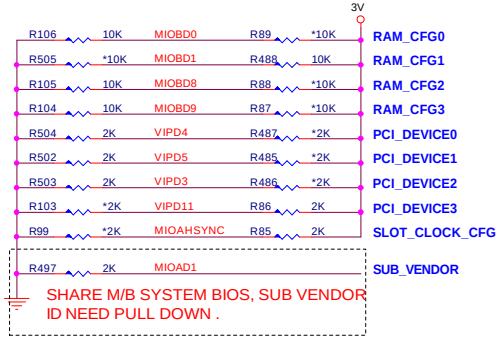


PCI DEVICE

PCI_DEVICE[3:0]	DESCRIPTION
1000	G72M/G73M
0111	G72M-V/G73M-V
others	Reserved

GFX_VID0
L : Low Voltage
H : Normal Voltage



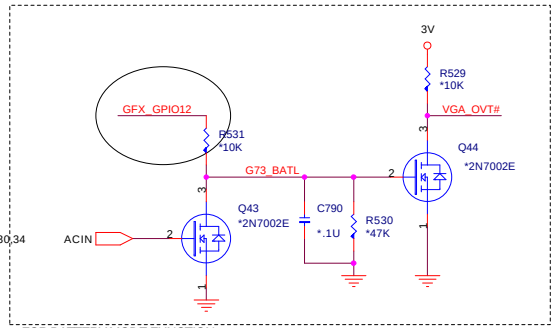


G72M VRAM Configuration Table

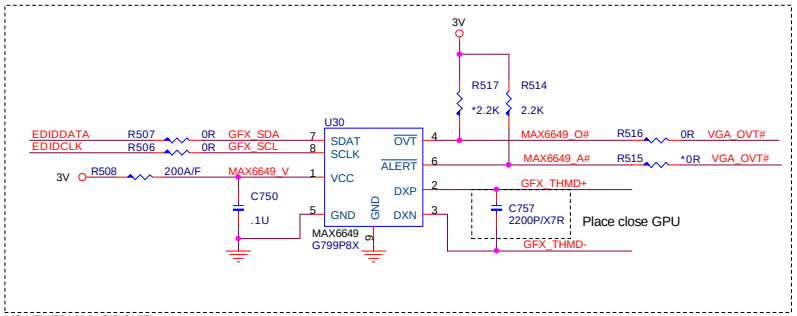
RAM_CFG[3:0]	DESCRIPTION	Vendor
0000	DDR2 16Mx16x4, 64bit, 128MB	Elpida
0001	DDR2 16Mx16x4, 64bit, 128MB	Samsung
0010	DDR2 16Mx16x4, 64bit, 128MB	Infineon
0011	DDR2 16Mx16x4, 64bit, 128MB	Hynix
0100	Reserved	
0101	DDR2 32Mx16x4, 64bit, 256MB	Samsung
0110	DDR2 32Mx16x4, 64bit, 256MB	Infineon
0111	DDR2 32Mx16x4, 64bit, 256MB	Hynix
1000	DDR2 16Mx16x2, 32bit, 64MB	Elpida
1001	DDR2 16Mx16x2, 32bit, 64MB	Samsung
1010	DDR2 16Mx16x2, 32bit, 64MB	Infineon
1011	DDR2 16Mx16x2, 32bit, 64MB	Hynix
others	Reserved	

G73M VRAM Configuration Table

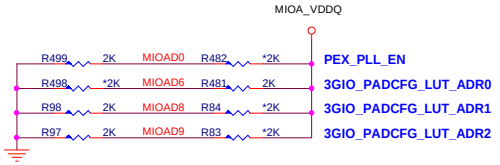
RAM_CFG[3:0]	DESCRIPTION	Vendor
0000	DDR2 16Mx16x8, 128bit, 256MB	Elpida
0001	DDR2 16Mx16x8, 128bit, 256MB	Samsung
0010	DDR2 16Mx16x8, 128bit, 256MB	Infineon
0011	DDR2 16Mx16x8, 128bit, 256MB	Hynix
0100	Reserved	
0101	DDR2 32Mx16x8, 128bit, 512MB	Samsung
0110	DDR2 32Mx16x8, 128bit, 512MB	Infineon
0111	DDR2 32Mx16x8, 128bit, 512MB	Hynix
1000	DDR2 16Mx16x4, 64bit, 128MB	Elpida
1001	DDR2 16Mx16x4, 64bit, 128MB	Samsung
1010	DDR2 16Mx16x4, 64bit, 128MB	Infineon
1011	DDR2 16Mx16x4, 64bit, 128MB	Hynix
1100	Reserved	
1101	DDR2 32Mx16x4, 64bit, 256MB	Samsung
1110	DDR2 32Mx16x4, 64bit, 256MB	Infineon
1111	DDR2 32Mx16x4, 64bit, 256MB	Hynix



FOR BATTERY MODE FUNCTION
GFX_GPIO12=H ENABLE
GFX_GPIO12=L DISABLE



VGA THERMAIL CIRCUIT



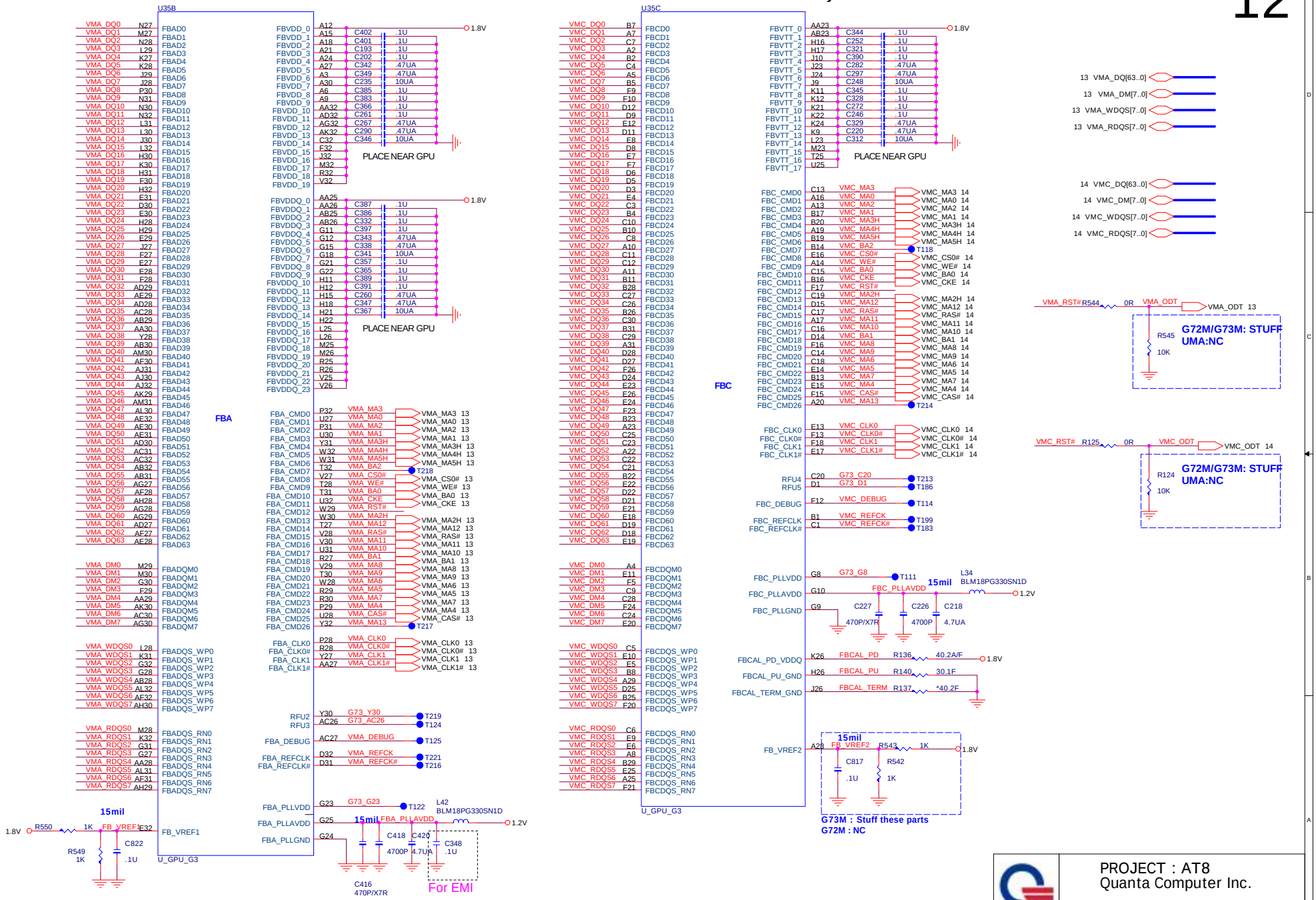
PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	GFX(ROM, GPIO, STRAP)	1A

Date: Thursday, December 29, 2005 | Sheet 11 of 38

NB5/RD2/HW1

Channel C is available on G73M only

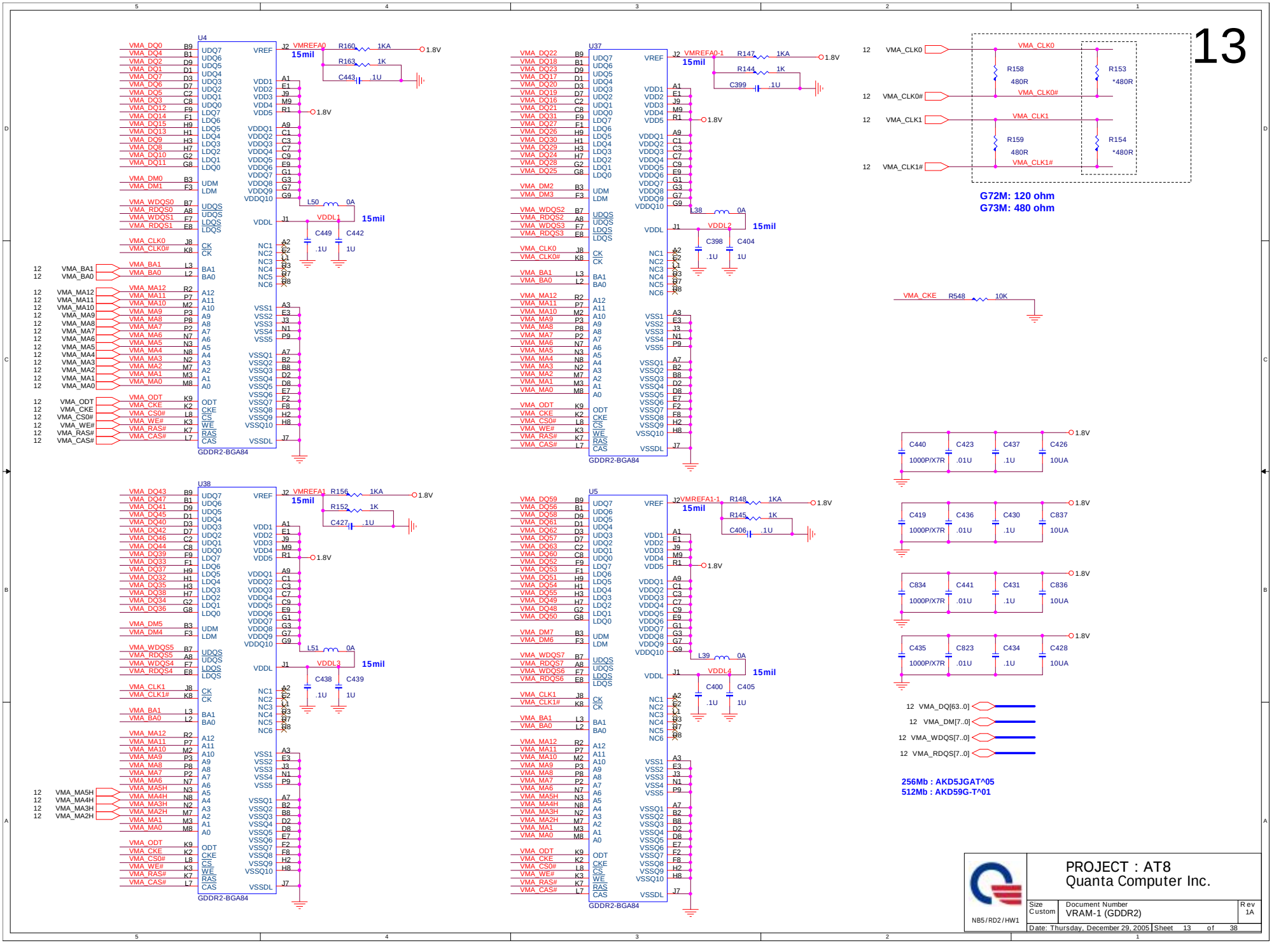


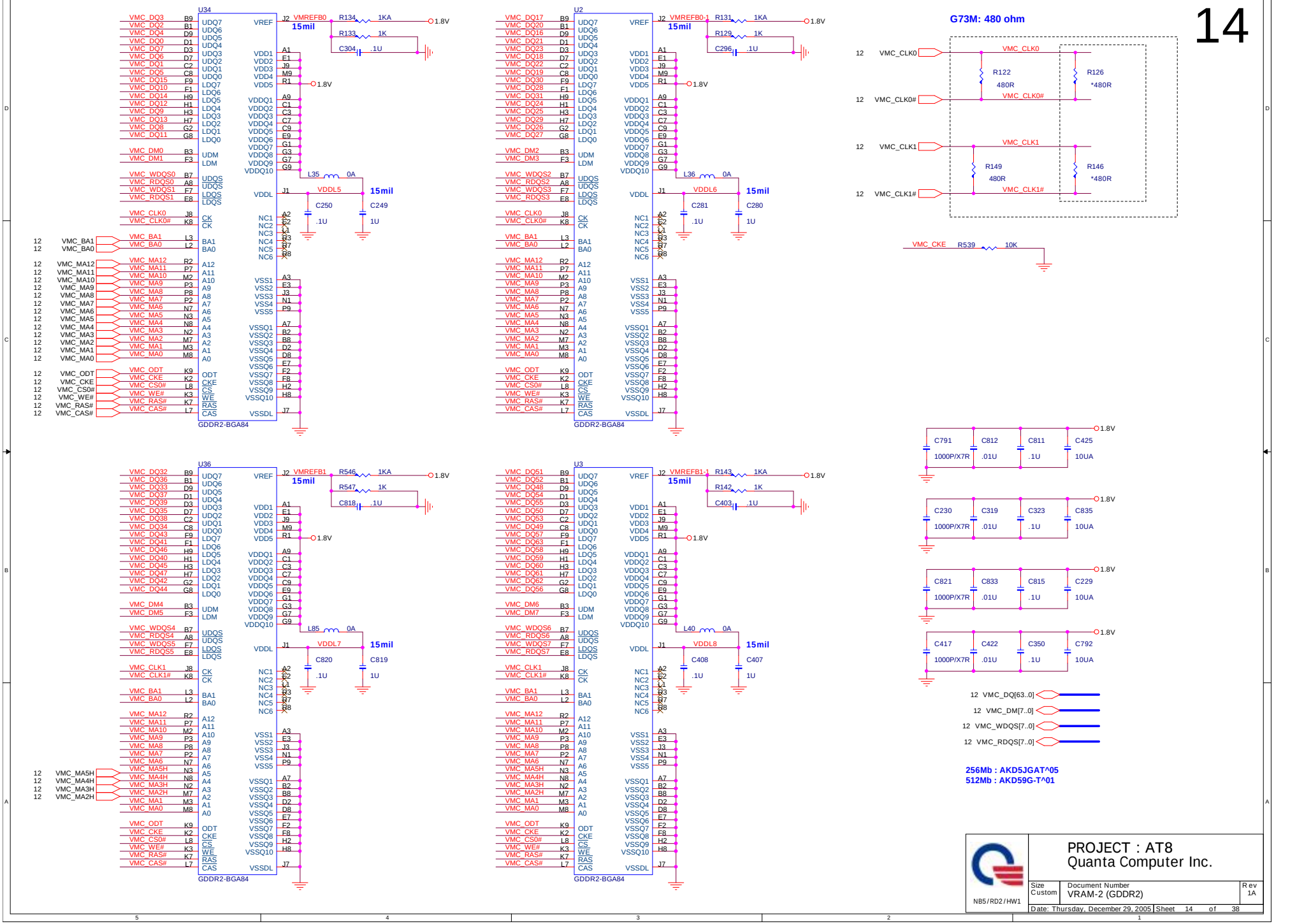
PROJECT : AT8
Quanta Computer Inc.

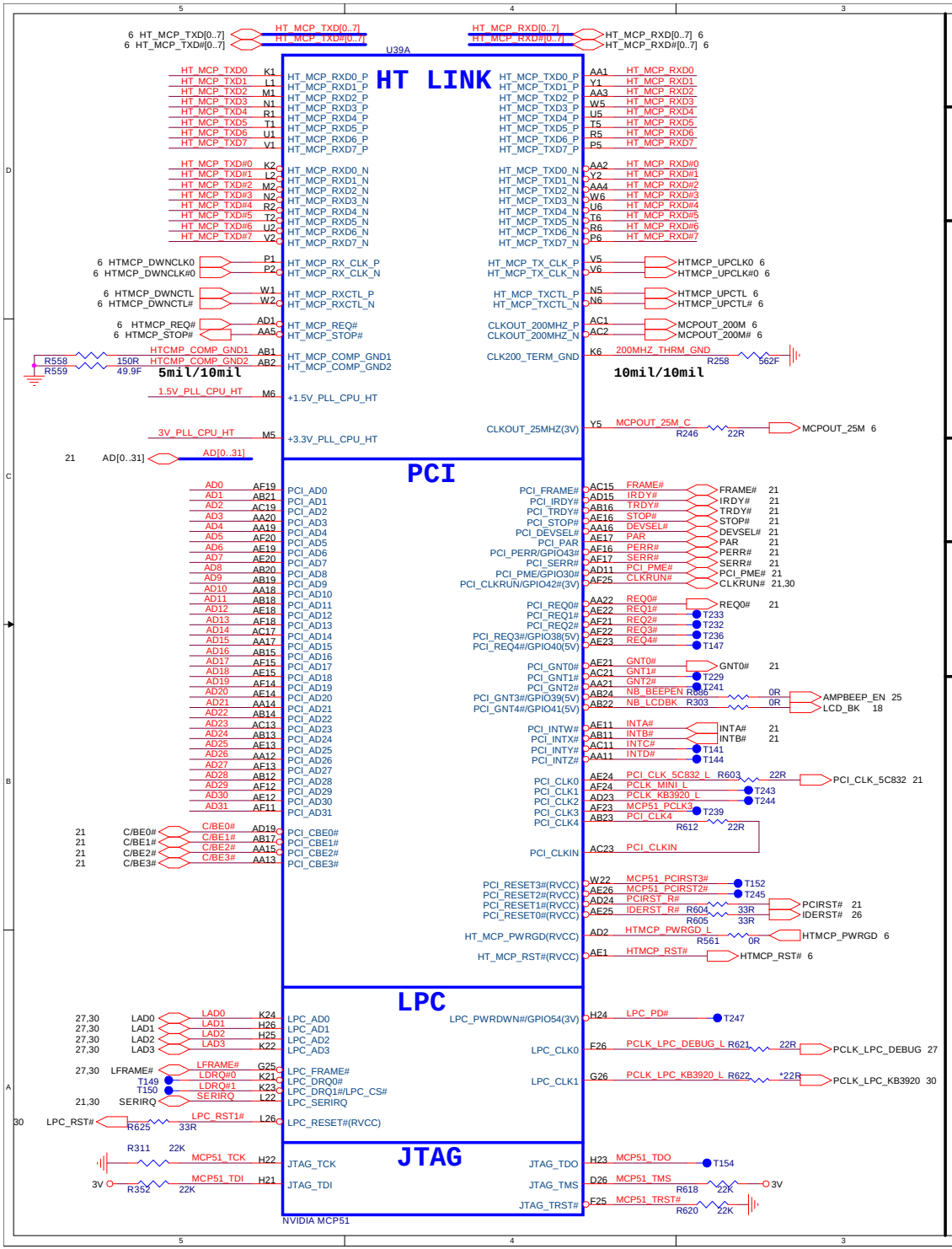
Size	Document Number	Rev
Custom	GFX (MEM INTERFACE)	1A

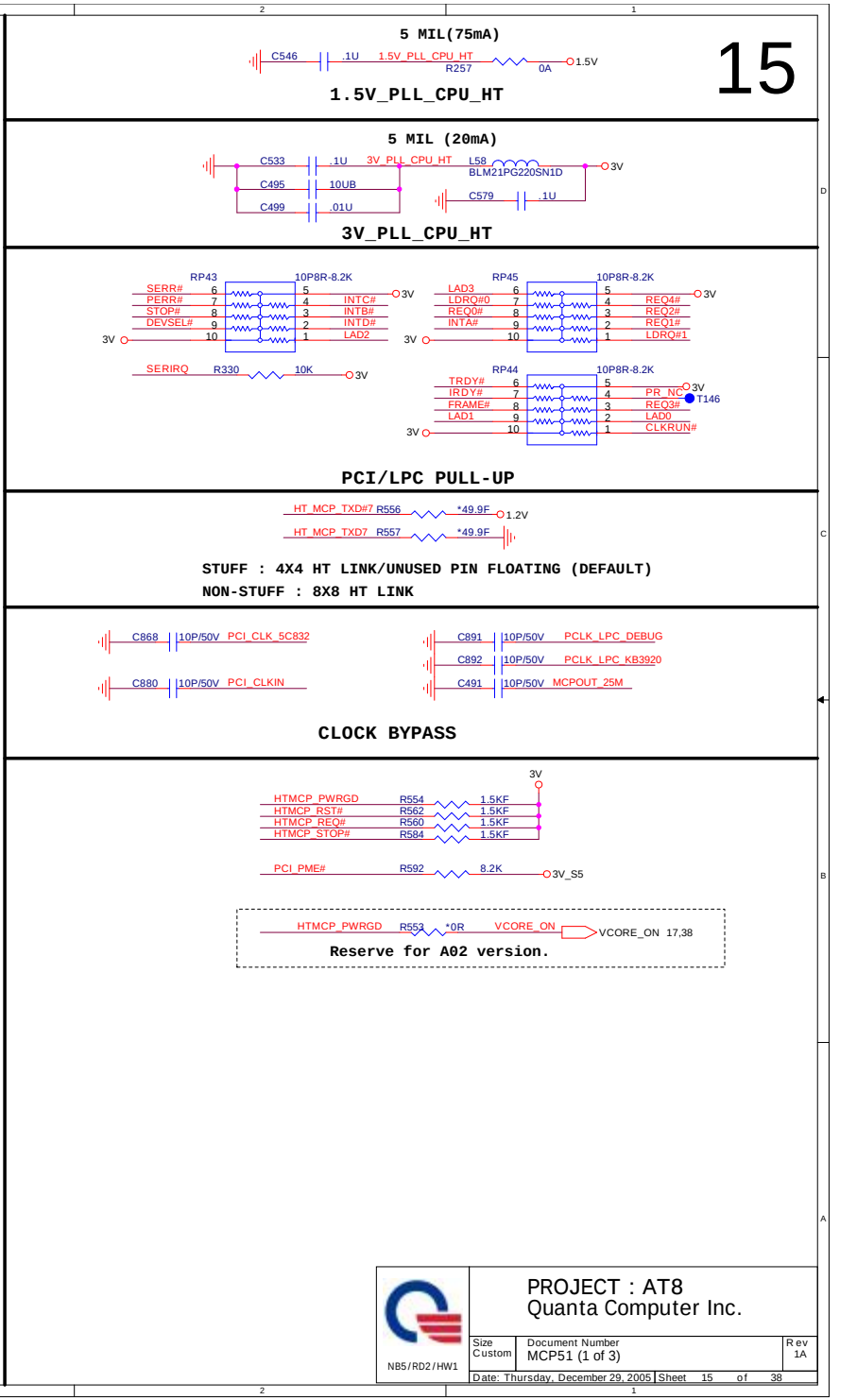
NB5/RD2/HW1

Date: Thursday, December 29, 2005 Sheet 12 of 38









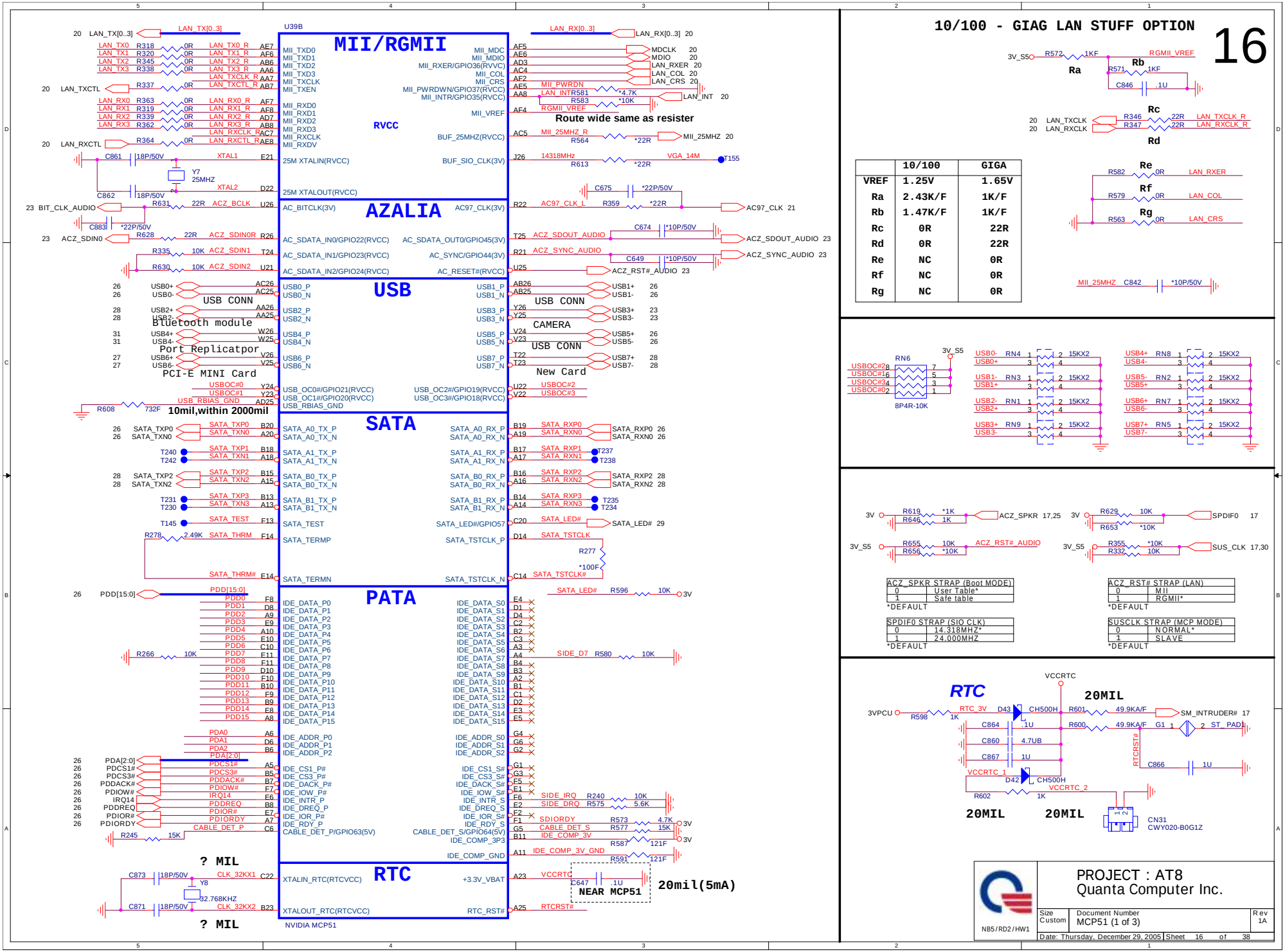
15

PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	MCP51 (1 of 3)	1A

NB5/RD2/HW1

Date: Thursday, December 29, 2005 | Sheet 15 of 38



10/100 - GIAG LAN STUFF OPTION

16

	10/100	GIGA
VREF	1.25V	1.65V
Ra	2.43K/F	1K/F
Rb	1.47K/F	1K/F
Rc	0R	22R
Rd	0R	22R
Re	NC	0R
Rf	NC	0R
Rg	NC	0R

ACZ_SPKR STRAP (Boot MODE)	
0	User Table*
1	Safe table

*DEFAULT

ACZ_RST# STRAP (LAN)	
0	MII
1	RGMII*

*DEFAULT

SPDIF0 STRAP (SIO CLK)	
0	14.318MHZ*
1	24.000MHZ

*DEFAULT

SUSCLK STRAP (MCP MODE)	
0	NORMAL*
1	SLAVE

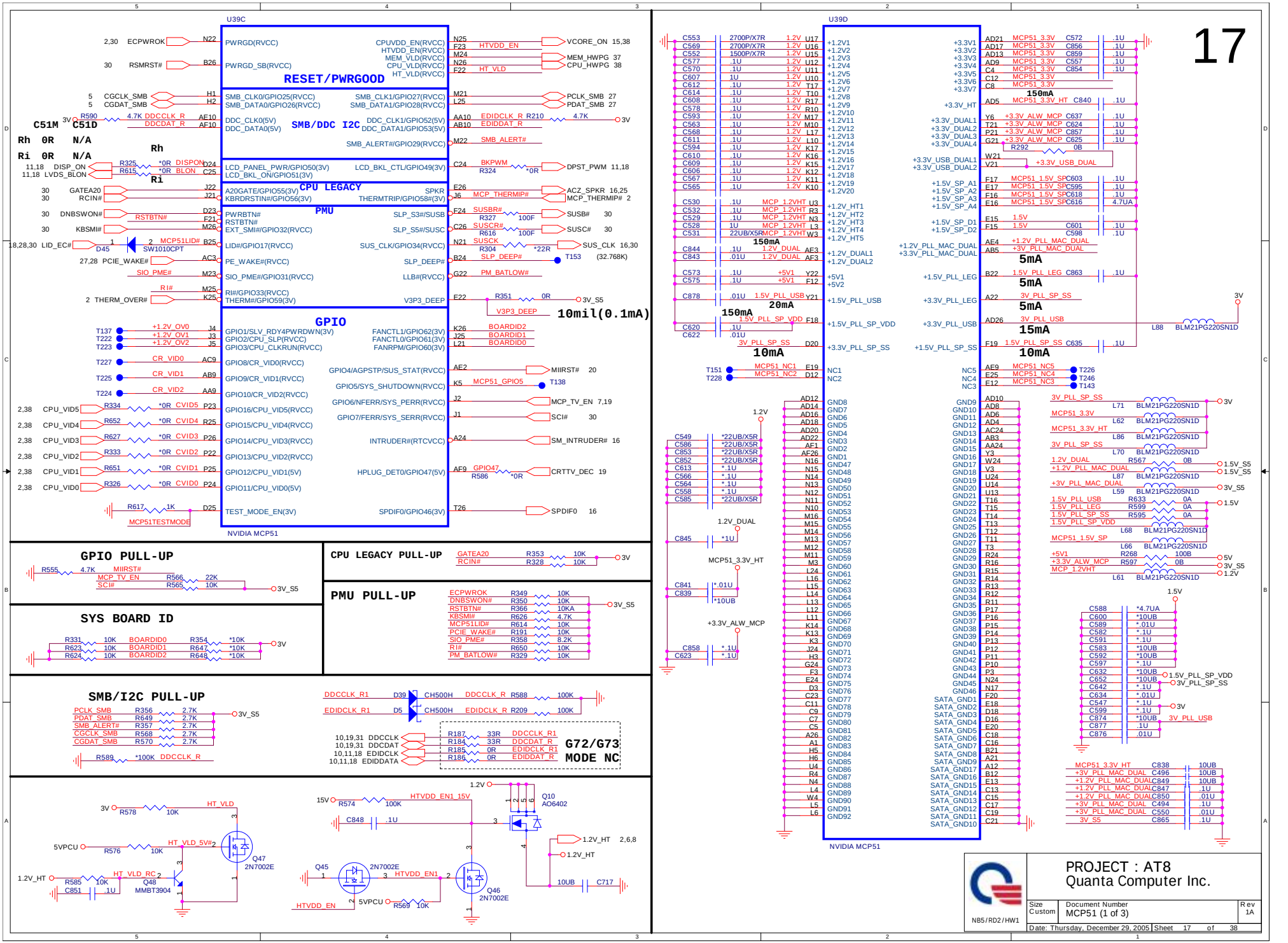
*DEFAULT

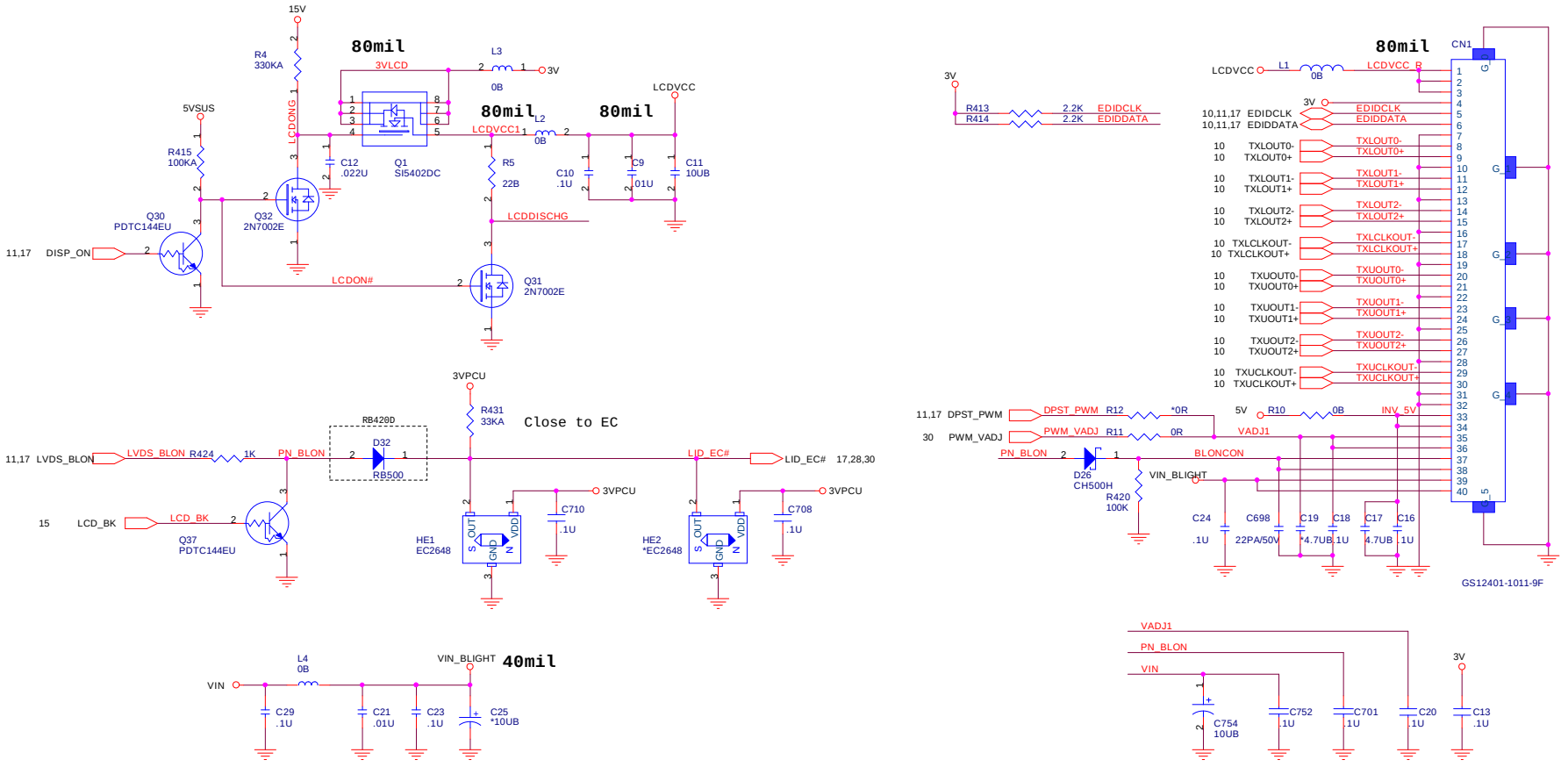
PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	MCP51 (1 of 3)	1A

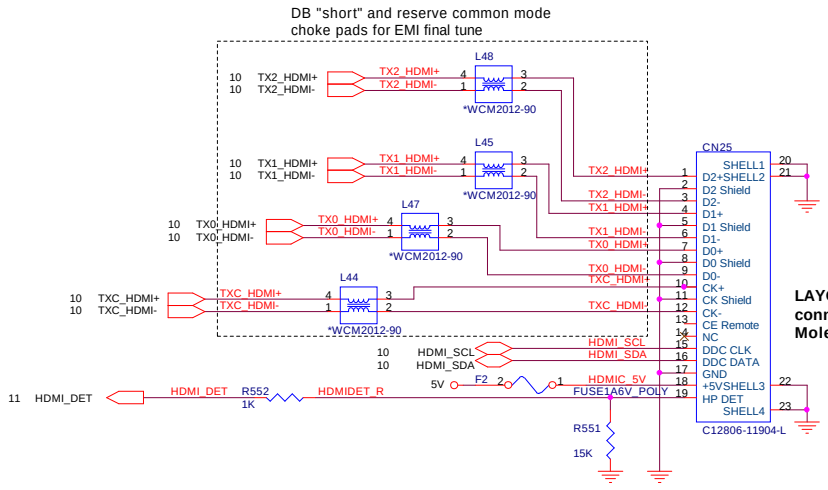
Date: Thursday, December 29, 2005 | Sheet 16 of 38

NB5/RD2/HW1





HDMI PORT



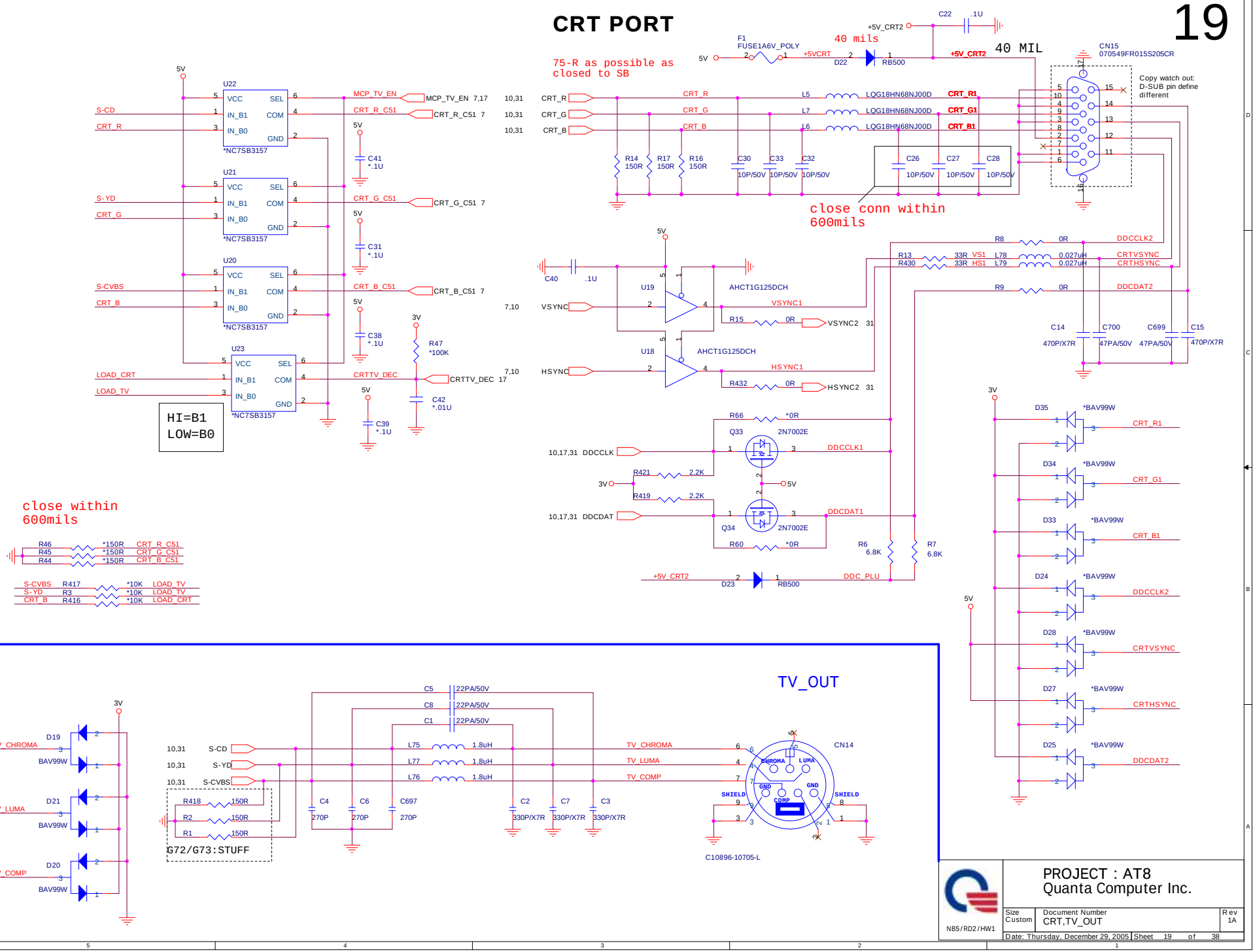
NB5/RD2/HW1

PROJECT : AT8
Quanta Computer Inc.

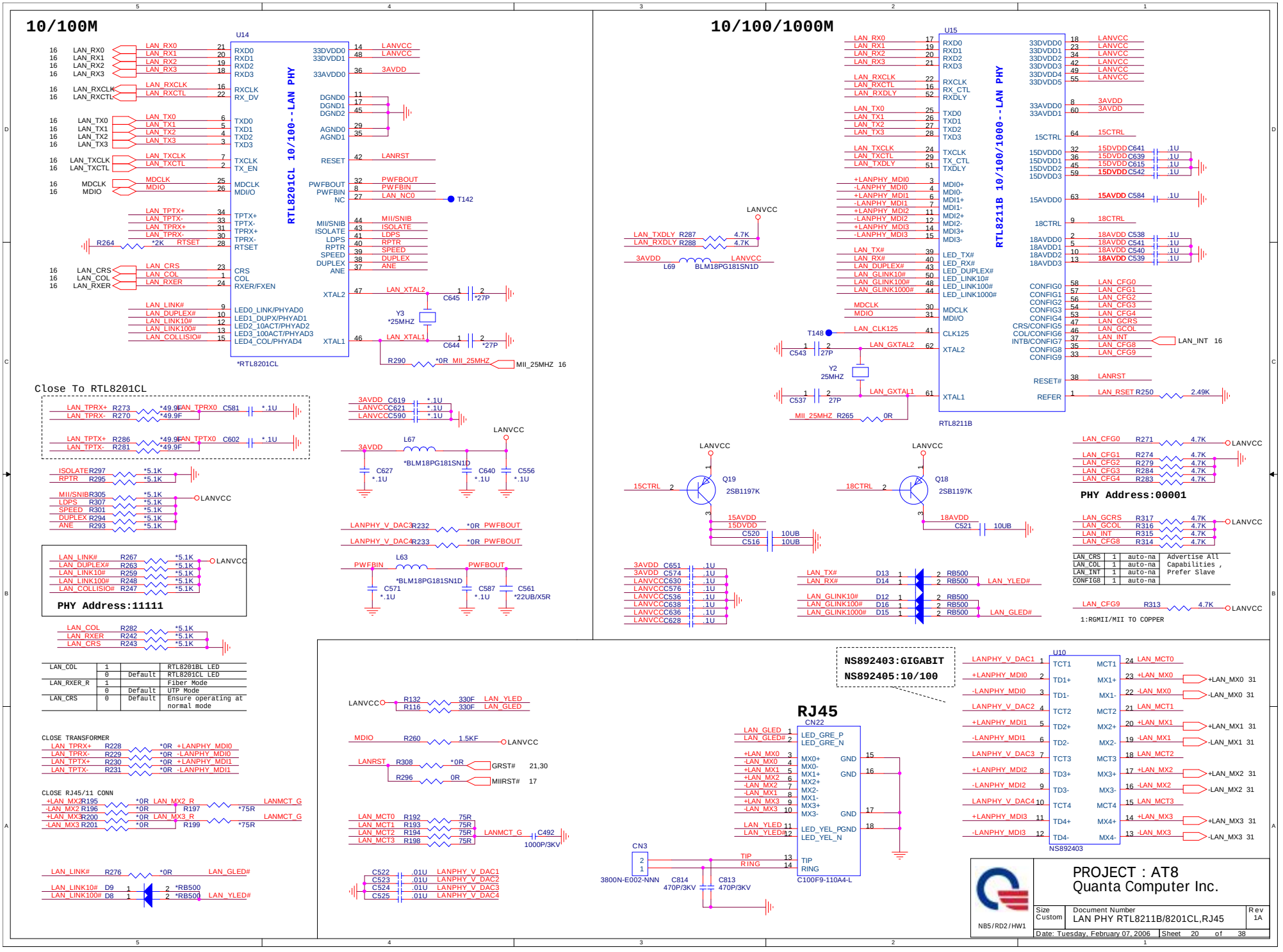
Size	Document Number	Rev
Custom	LCD CONN,HDMI CONN	1A

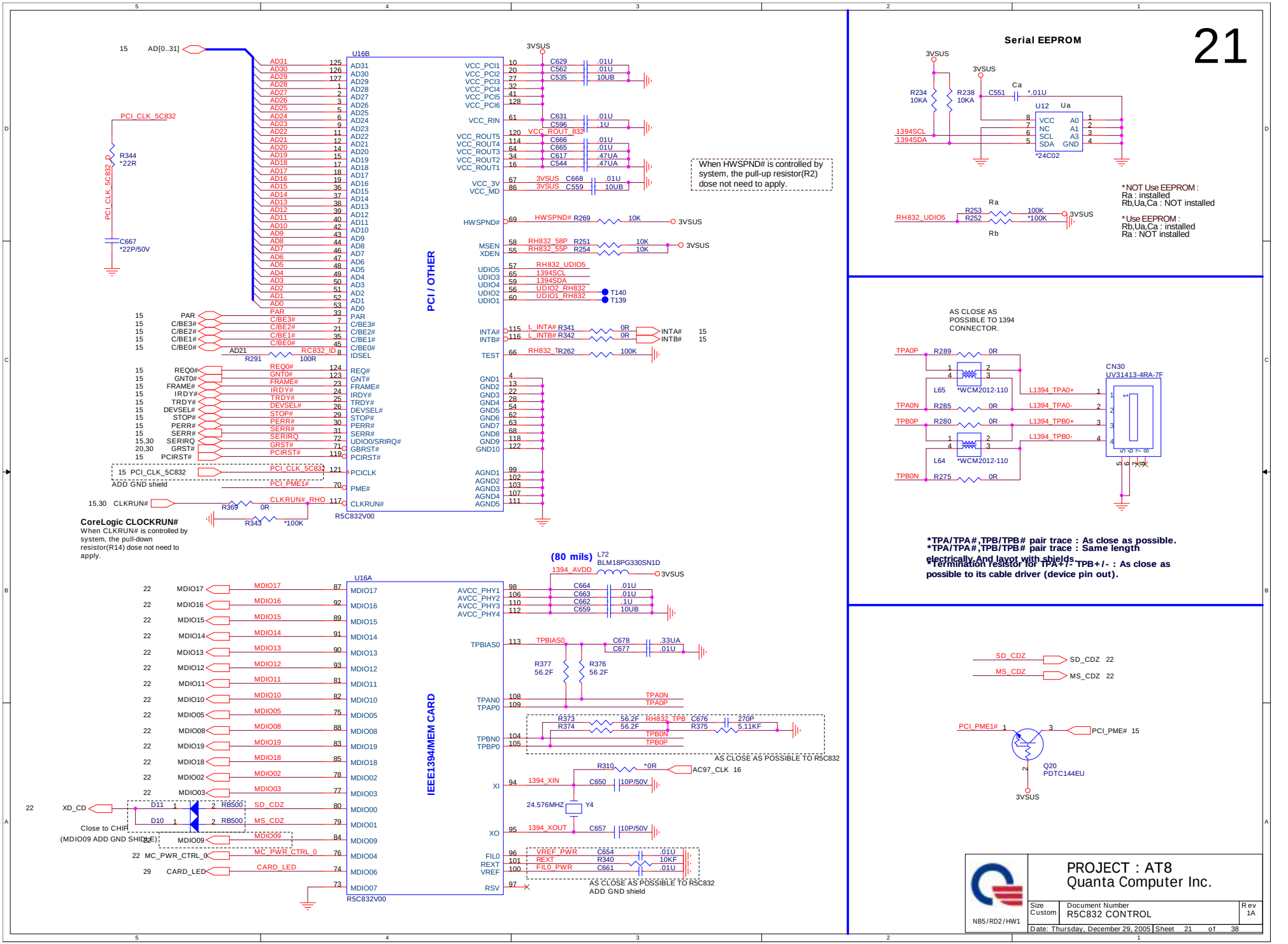
Date: Thursday, December 29, 2005 | Sheet 18 of 38

CRT PORT



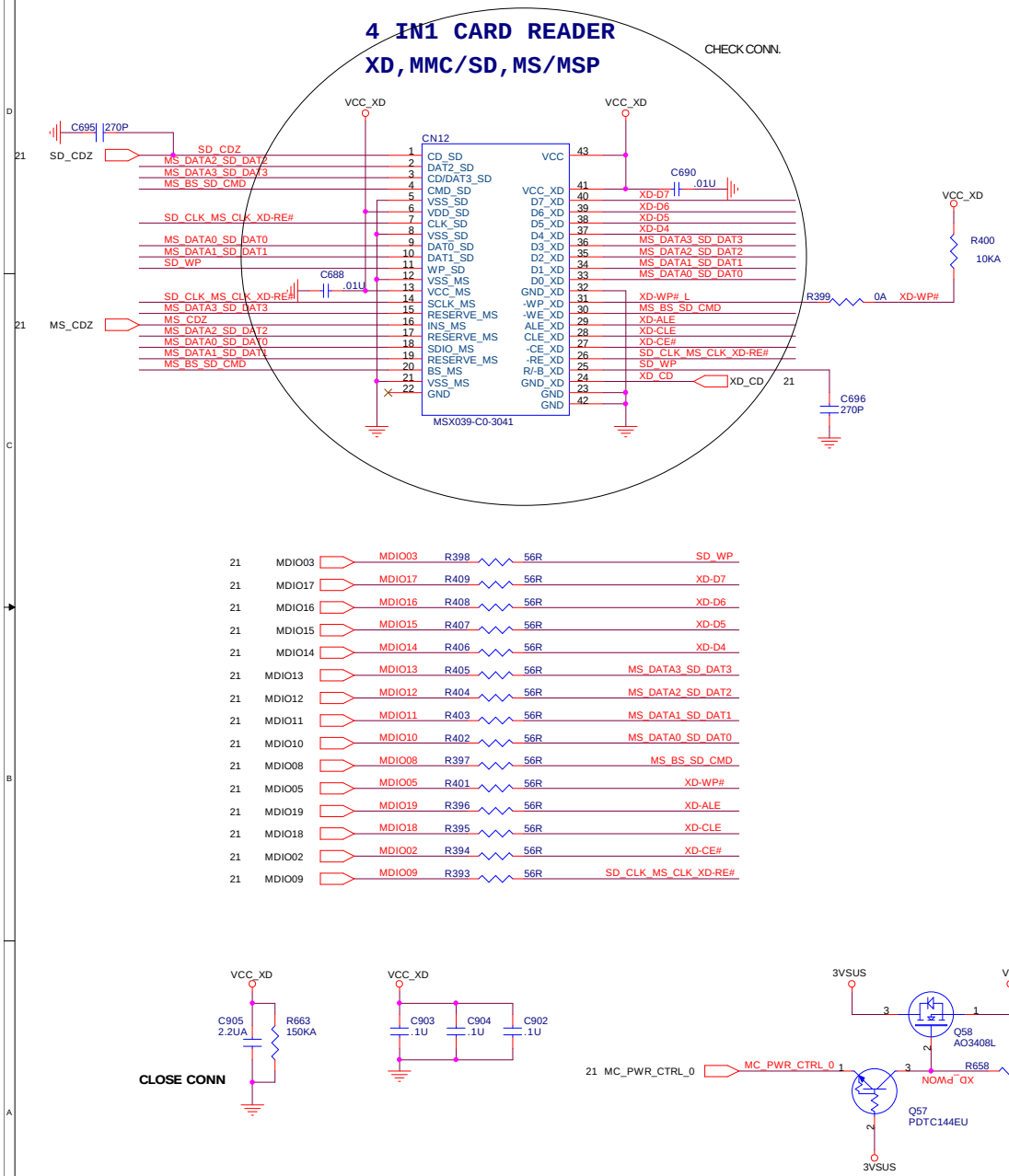
PROJECT : AT8	
Quanta Computer Inc.	
Size: Custom	Document Number: CRT,TV_OUT
Rev: 1A	
NB5/RD2/HW1	
Date: Thursday, December 29, 2005	Sheet 19 of 38



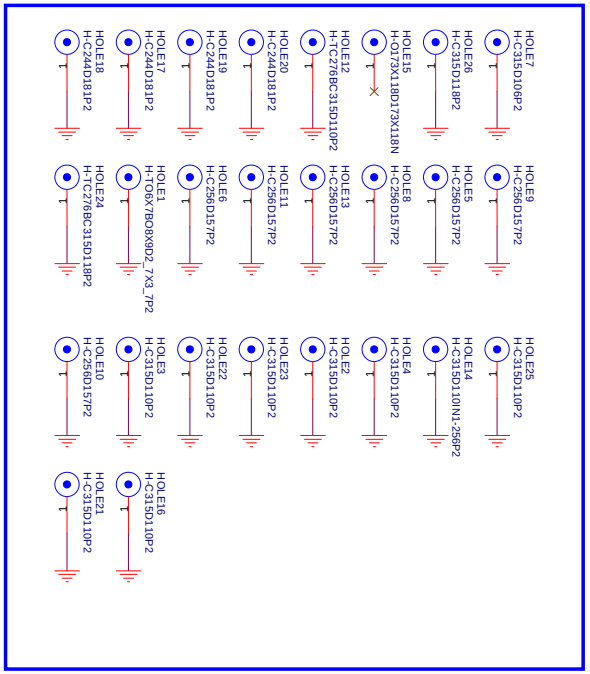


4 IN1 CARD READER
XD,MMC/SD,MS/MSP

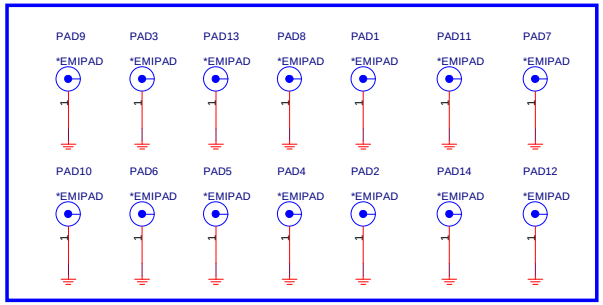
CHECK CONN.



SCREW HOLE



EMI PAD



PROJECT : AT8
Quanta Computer Inc.

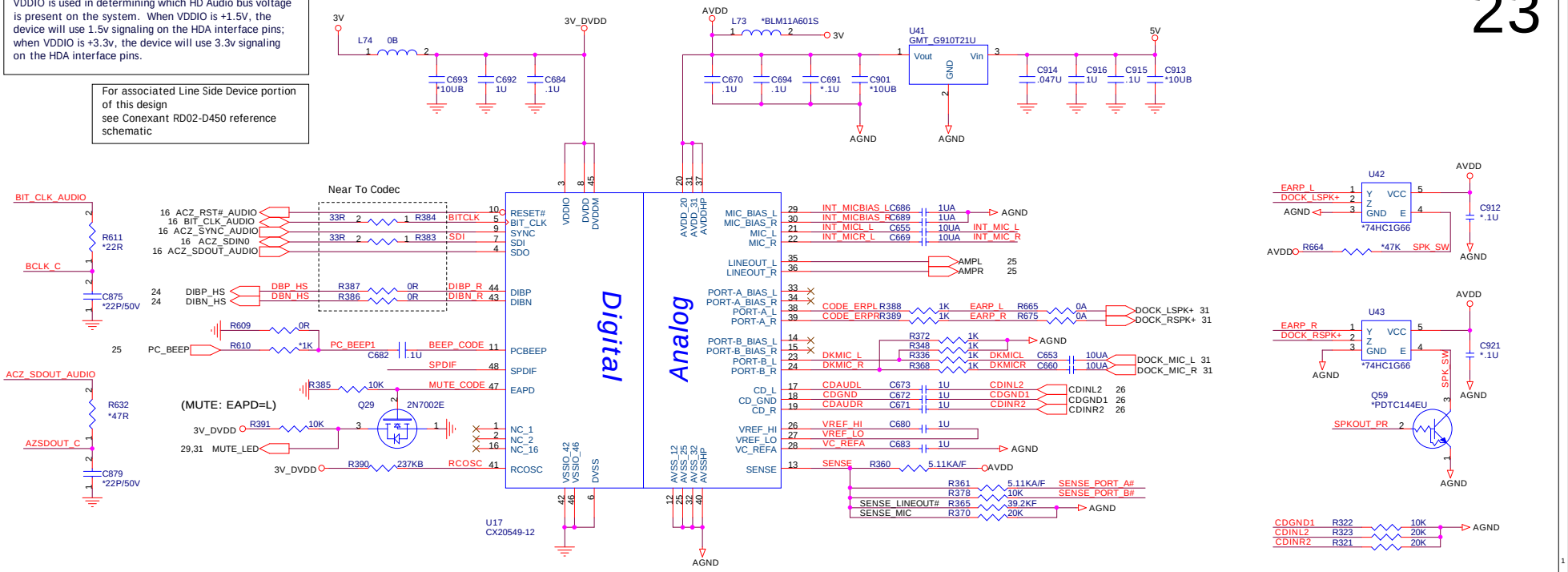
Size	Document Number	Rev
Custom	CARD READER CONN	1A

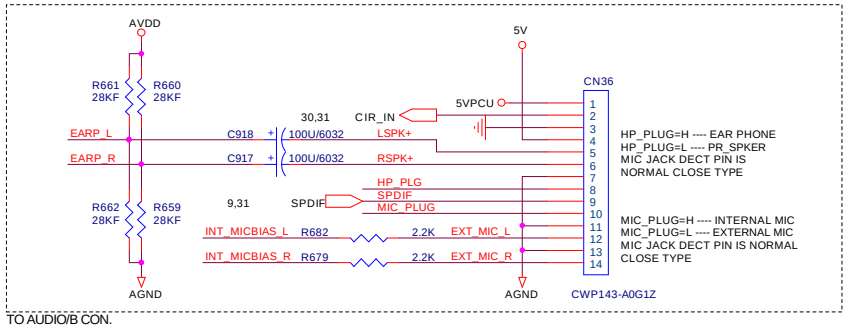
NB5/RD2/HW1

Date: Thursday, December 29, 2005 Sheet 22 of 38

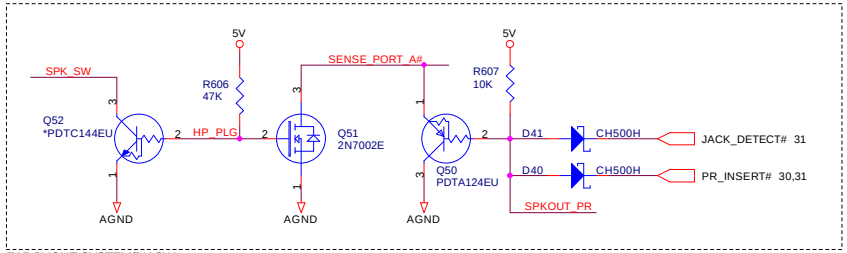
VDDIO is used in determining which HD Audio bus voltage is present on the system. When VDDIO is +1.5V, the device will use 1.5v signaling on the HDA interface pins; when VDDIO is +3.3v, the device will use 3.3v signaling on the HDA interface pins.

For associated Line Side Device portion of this design see Conexant RD02-D450 reference schematic

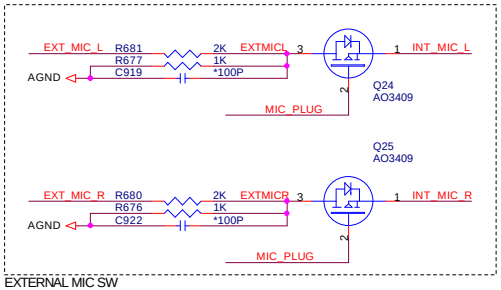




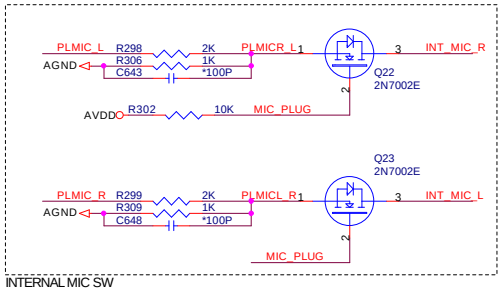
TO AUDIO/B CON.



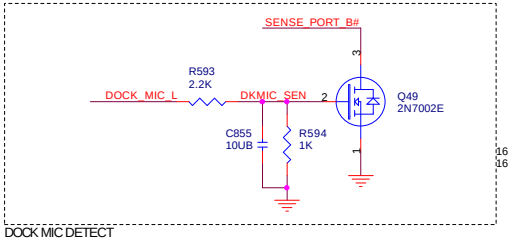
EAR PHONE SYSTEM/DK SW



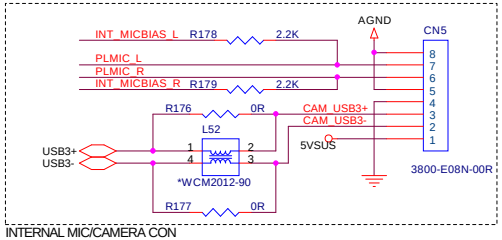
EXTERNAL MIC SW



INTERNAL MIC SW



DOCK MIC DETECT

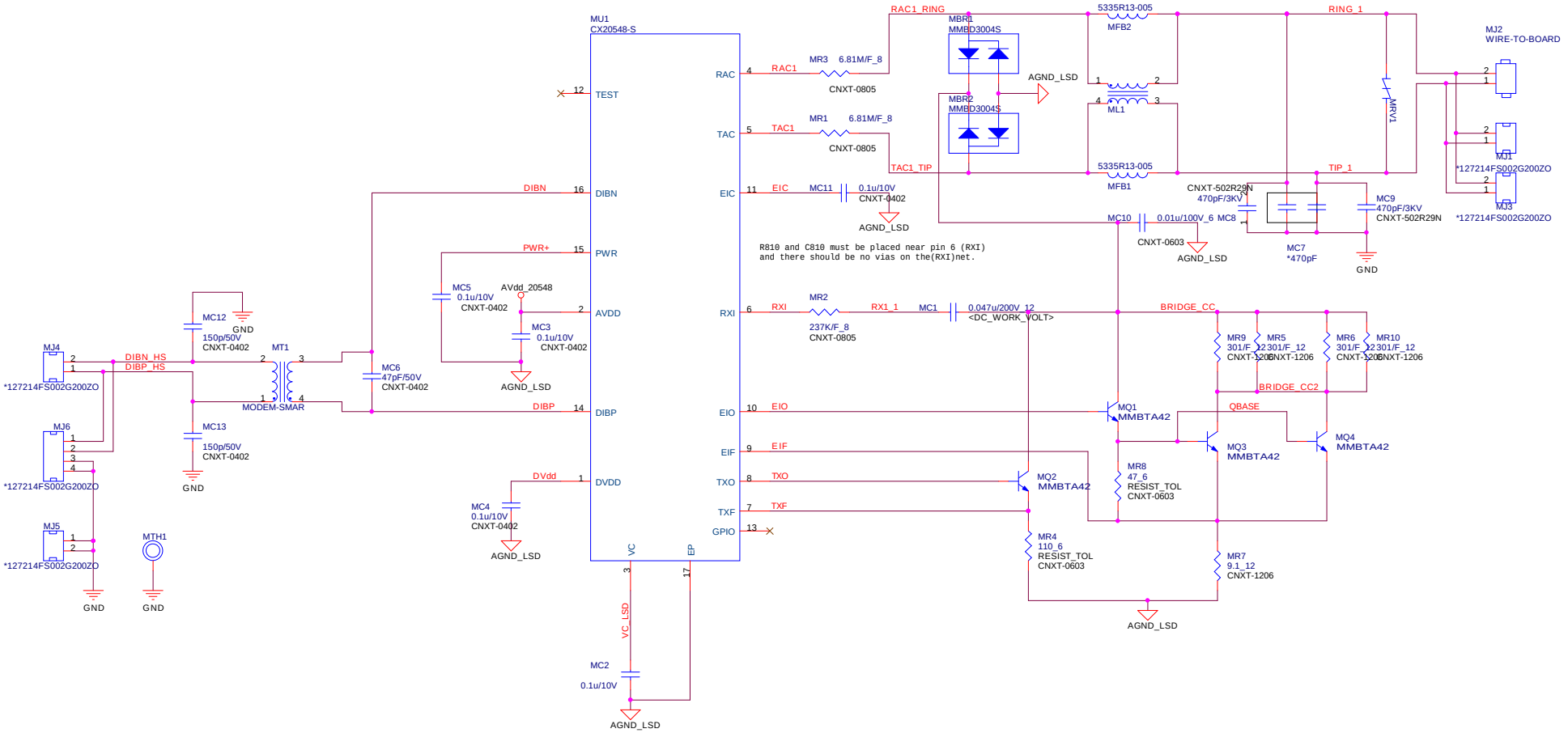


INTERNAL MIC/CAMERA CON

NB5/RD2/HW1	PROJECT : AT8 Quanta Computer Inc.	
	Size: Custom Document Number: Azalia CTRL_CONEXANT20549-12	Rev: 1A
	Date: Thursday, December 29, 2005 Sheet 23 of 38	

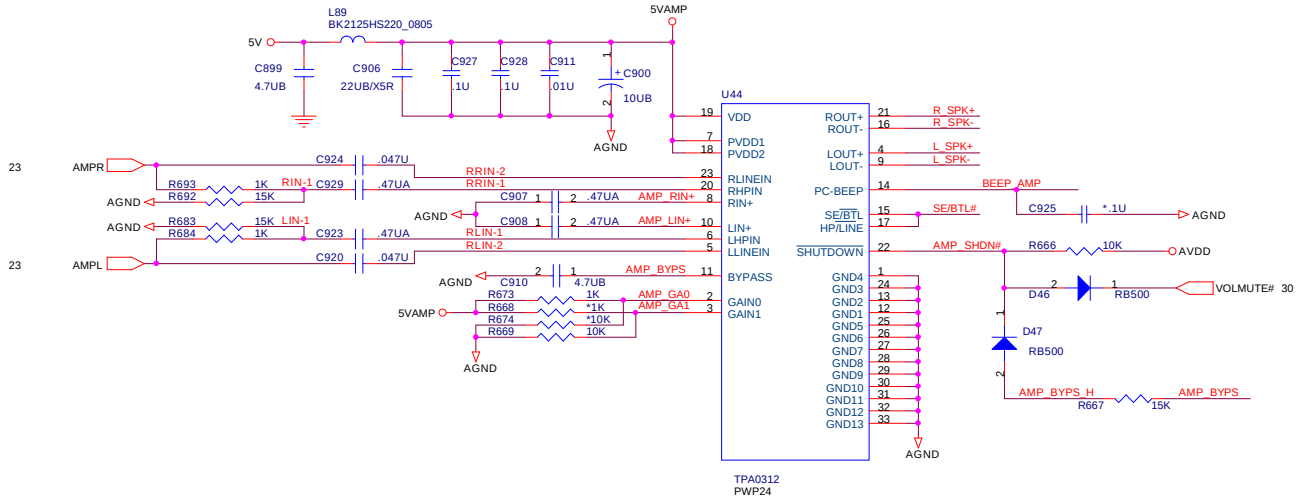
Revision History		
REV	Description	Date
0	Initial Release	April 26, 2005

23 DIBN_HS
23 DIBP_HS



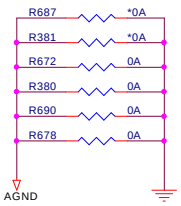
NB5/RD2/HW1	PROJECT : AT8 Quanta Computer Inc.		
	Size: Custom	Document Number: MODEM (DAA)	Rev: 1A
	Date: Thursday, December 29, 2005	Sheet 24 of 38	

AUDIO AMPLIFIER

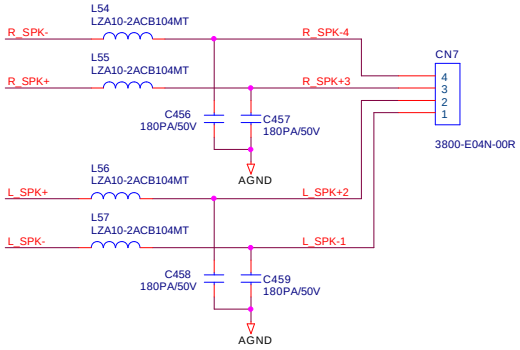


0312 Gain Table

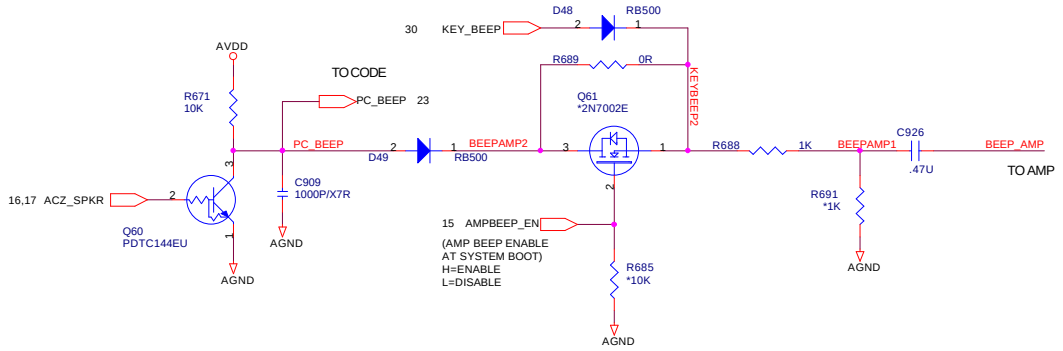
GAIN0	GAIN1	SE/BTL	AV(INV)
0	0	0	6dB
0	1	0	10dB
1	**0**	**0**	**15.6dB**
1	1	0	21.6dB
x	x	1	4.1dB



INT. SPEAKER



PCSPK BEEP



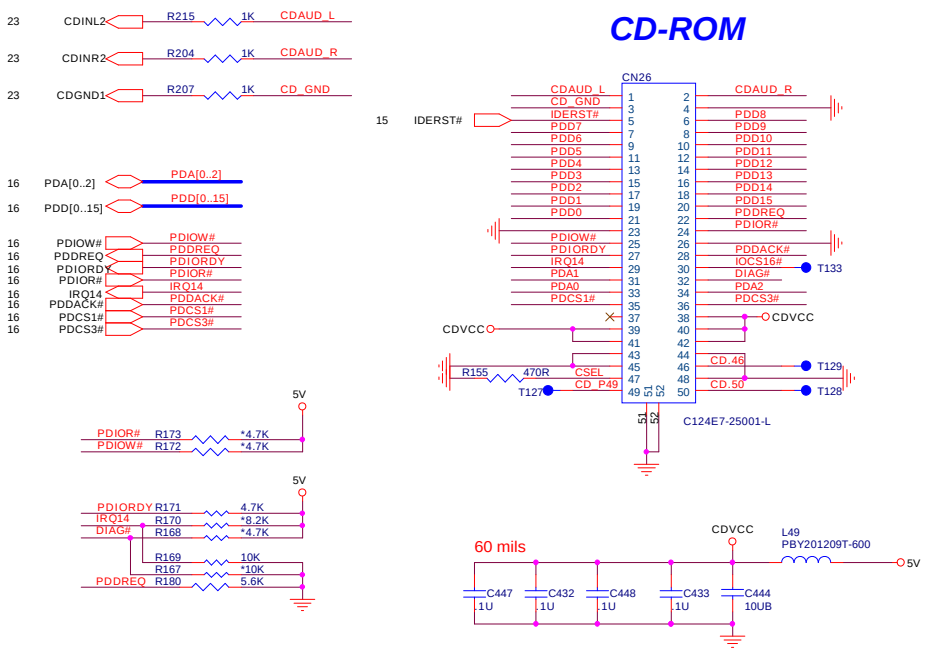
PROJECT : AT8
Quanta Computer Inc.

Size	Document Number	Rev
Custom	JACK, AMP_TPA0312	1A

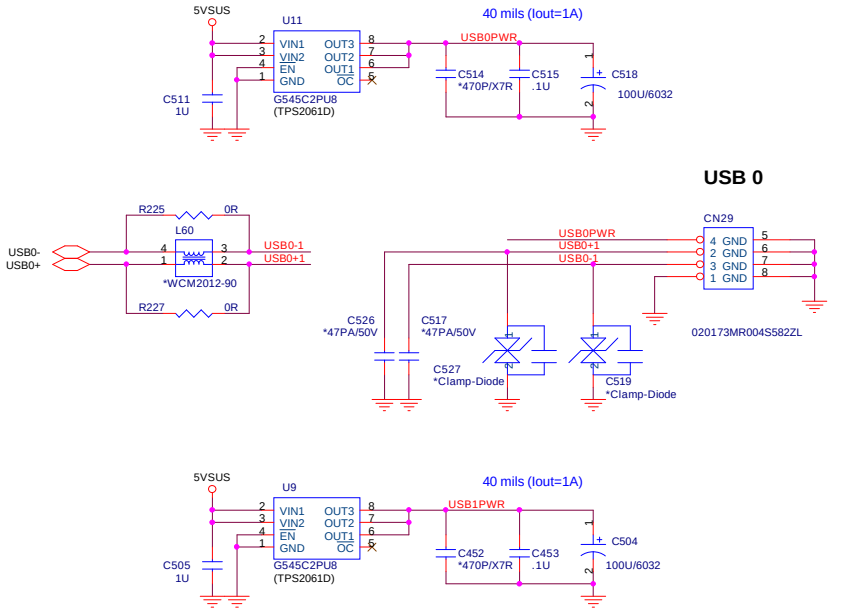
NB5/RD2/HW1

Date: Thursday, December 29, 2005 Sheet 25 of 38

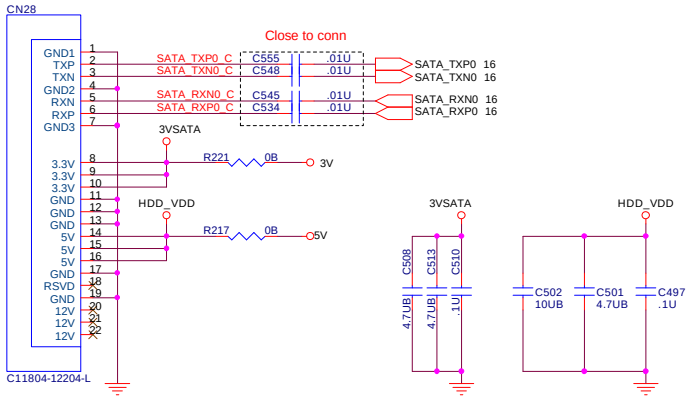
CD-ROM



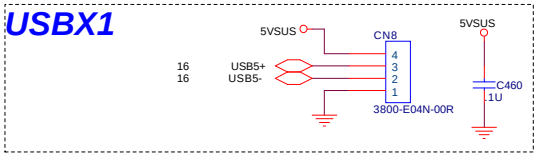
USBX2



SATA_1 CONNECTOR



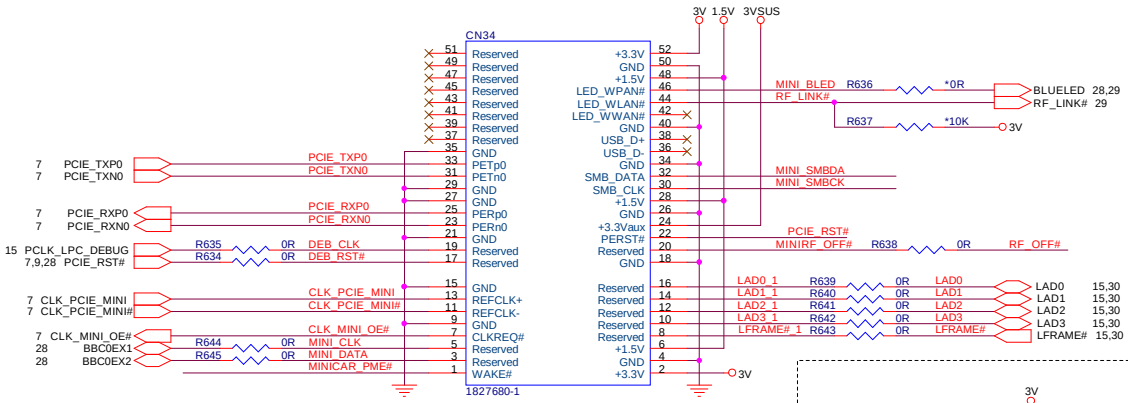
USBX1

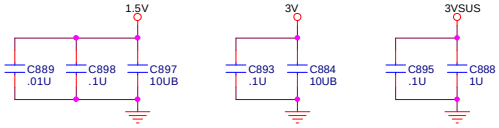


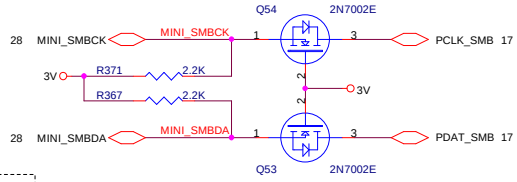
TO AD/B

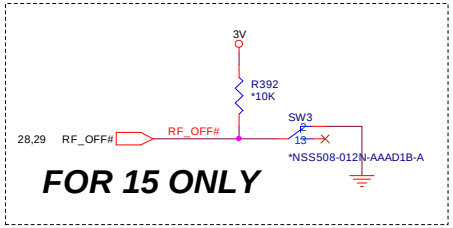
NB5/RD2/HW1	PROJECT : AT8 Quanta Computer Inc.	
	Size: Custom Document Number: SATA HDD, CD-ROM,USBX2	Rev: 1A
	Date: Thursday, December 29, 2005 Sheet 26 of 38	

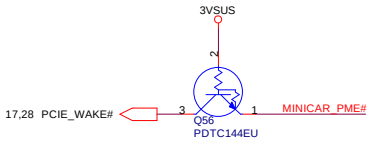
Mini PCI-E Card 1
WLAN





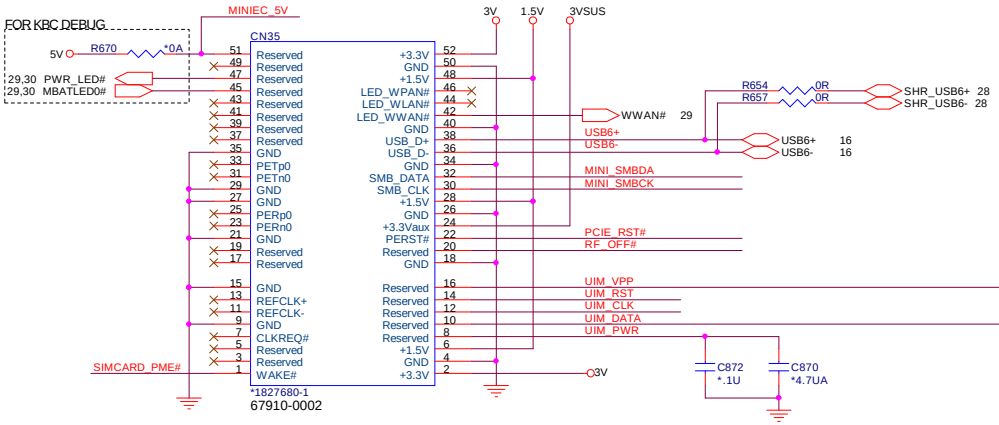


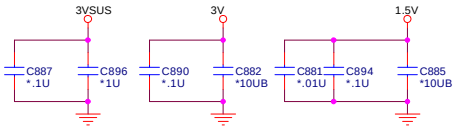


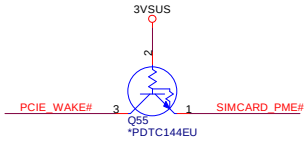


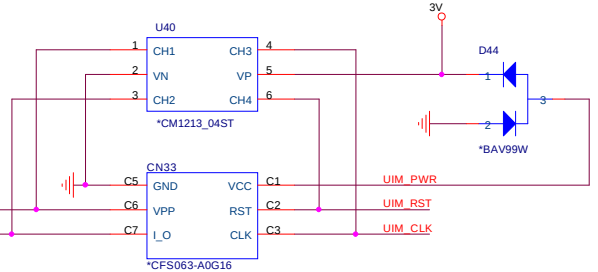
Mini PCI-E Card 2
WWAN(W/SIM)

FOR 15 ONLY









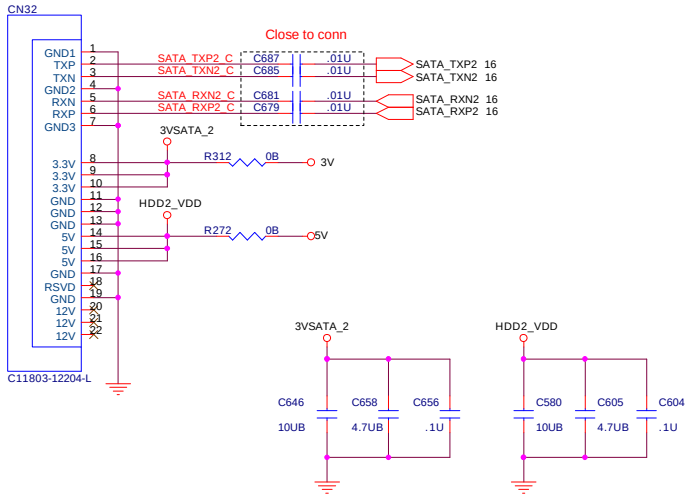
NB5/RD2/HW1

PROJECT : AT8
Quanta Computer Inc.

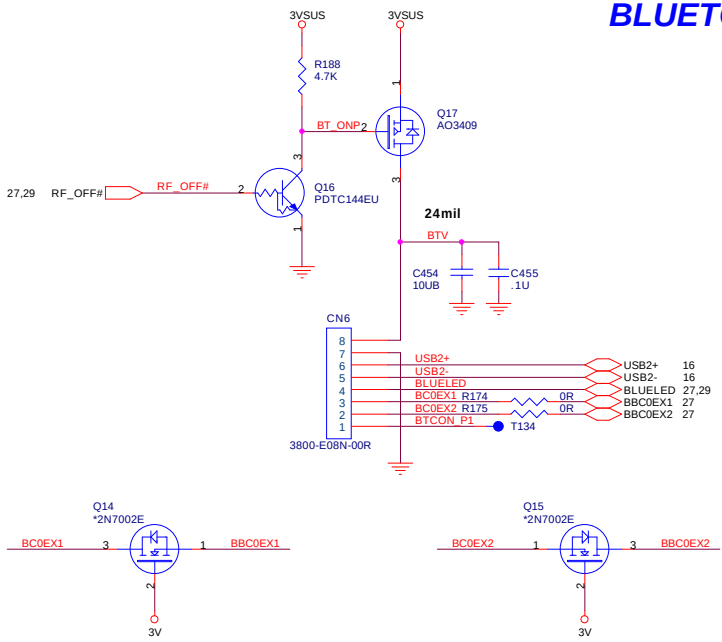
Size	Document Number	Rev
Custom	MINI CARD	1A

Date: Thursday, December 29, 2005 | Sheet 27 of 38

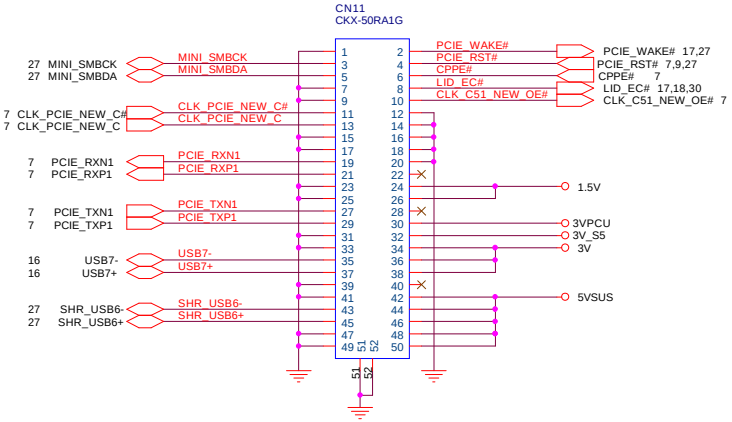
SATA_2 CONNECTOR
For 17"W Second HDD

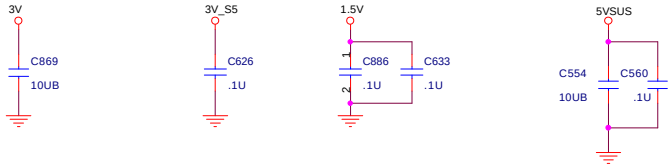


BLUETOOTH

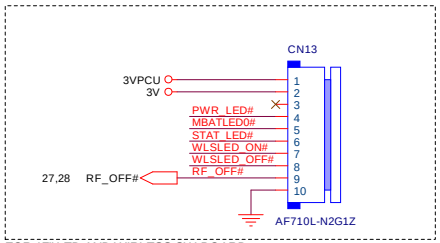


NEWCARD

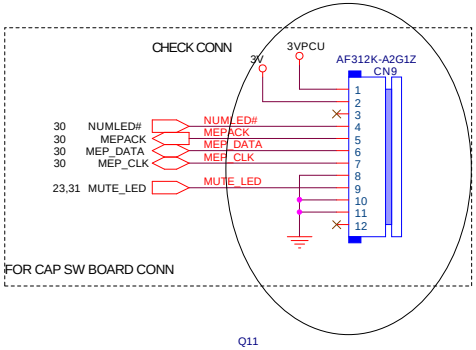




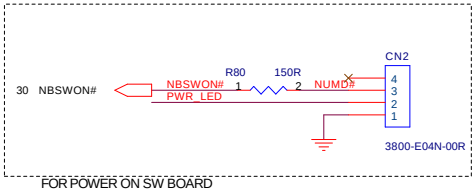
PROJECT : AT8 Quanta Computer Inc.		
Size: Custom	Document Number: NEW CARD/BT	Rev: 1A
NB5/RD2/HW1	Date: Thursday, December 29, 2005	Sheet 28 of 38



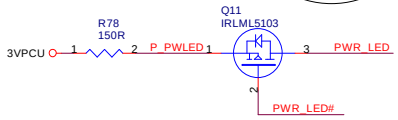
FOR 17" LED AND WIRLESS SW BOARD

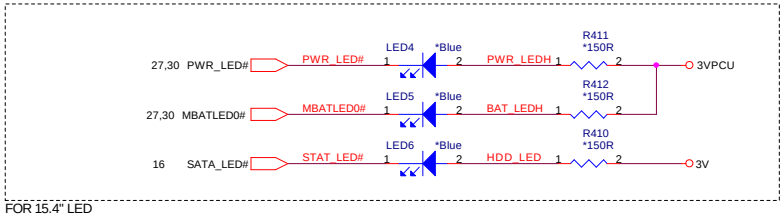


FOR CAP SW BOARD CONN

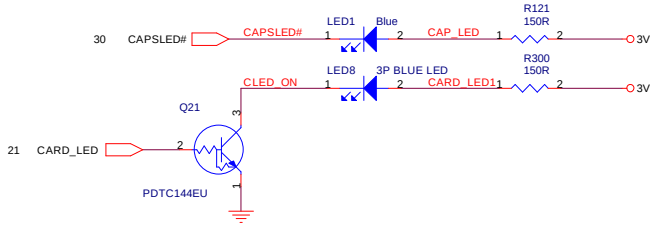


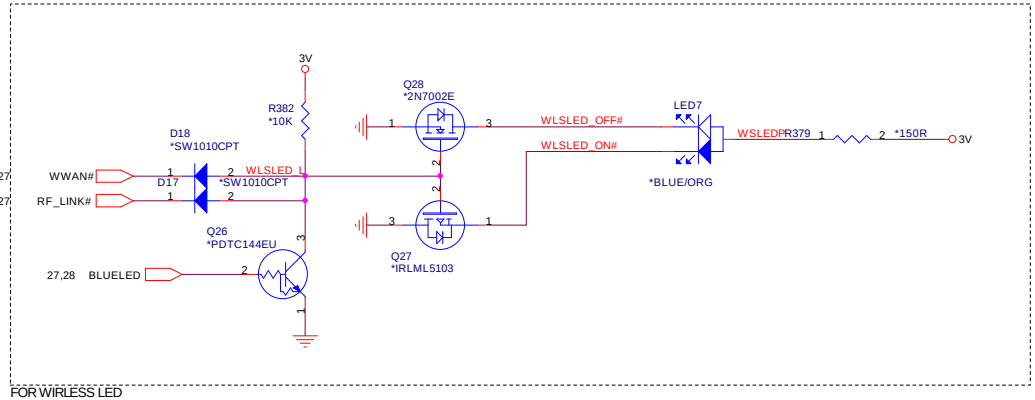
FOR POWER ON SW BOARD



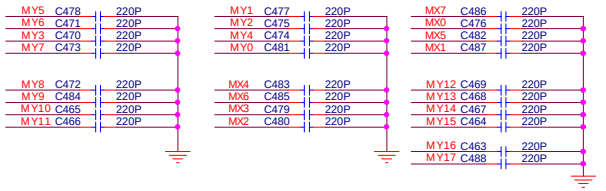


FOR 15.4" LED

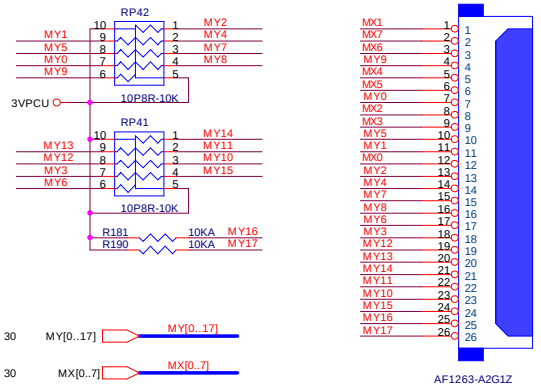


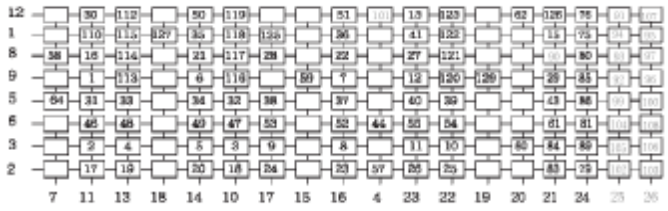


FOR WIRLESS LED



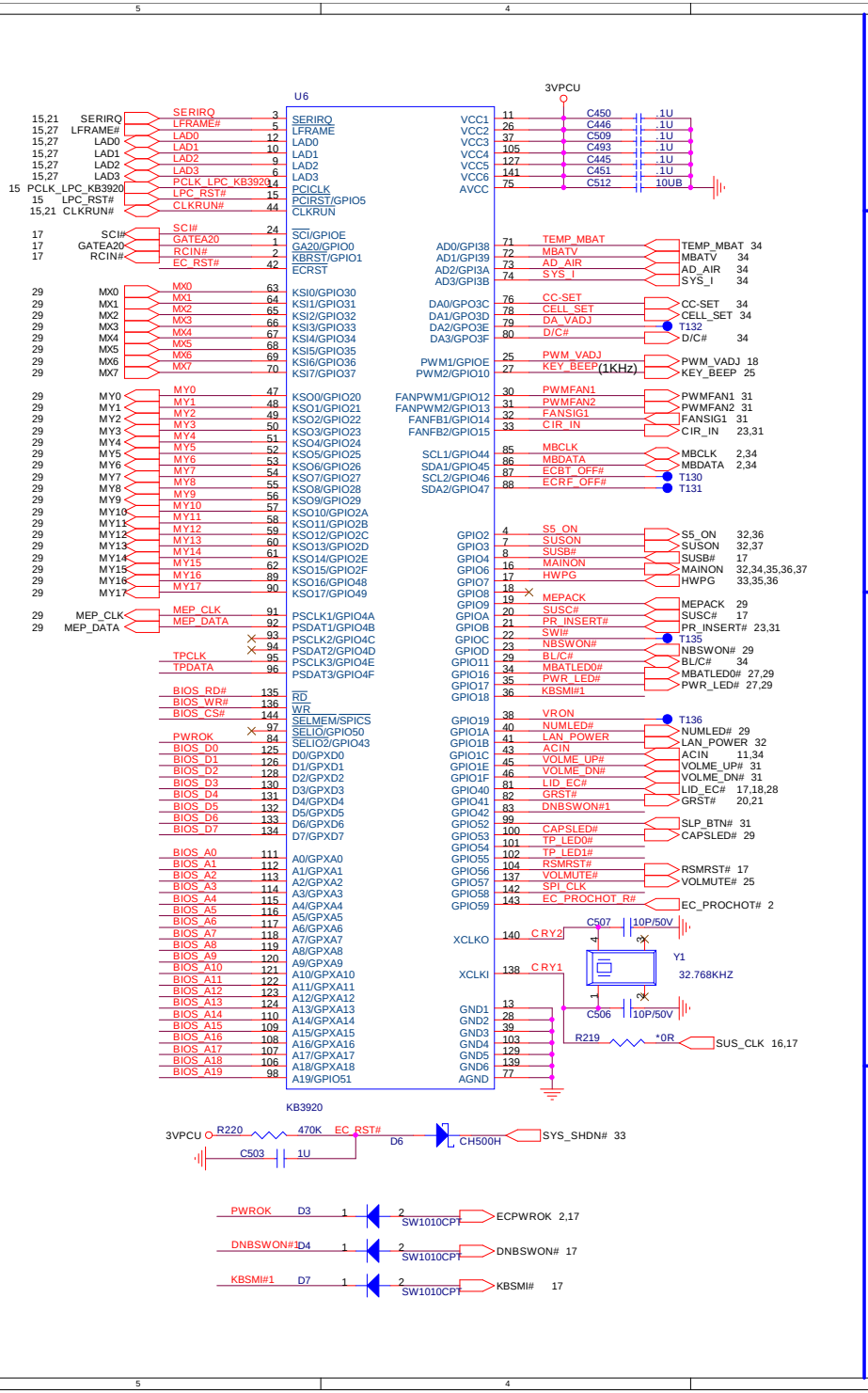
KEYBOARD PULL-UP





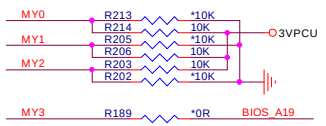
12		30	112		50	119		51	101	13	123		62	125	75	50	100							
1		110	115	127	35	118	120	36		41	122			15	75	24	99							
8	38	16	114		23	117	28		22		27	121				49	80	49	81					
9		1	113		6	116		50	7	12	120	126		26	85	97	96							
5	64	31	33		34	32	38		37		40	39				43	86	97	100					
6		45	48		40	47	53		52	44	55	54			61	81		101	116					
3		2	4		5	3	9		8		11	10		80	84	89		103	106					
2		17	19		20	18	24		25	37	95	25			83	75		104						
		7	11	13	15	14	10	17	15	16	4	23	22	19	20	21	24	25	26					

NB5/RD2/HW1	PROJECT : AT8 Quanta Computer Inc.		
	Size Custom	Document Number LED/KEYBOARD/TP	Rev 1A
	Date: Thursday, December 29, 2005	Sheet 29 of 38	



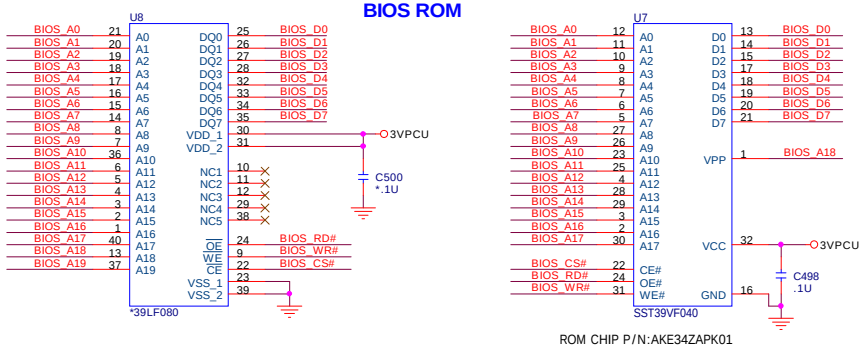
STRAP PIN

MY0	47	TP_TEST: Clock Test Mode Low: Test Mode. HIGH: 32kHz clock in normal runing
MY1	48	TP_PLL: DPLL Test Mode Low: Test Mode. HIGH: Normal operation
MY2	49	TP_SPI: Default flash access Low: Boot from SPI flash part HIGH: Boot from ISA flash part
MY3	50	TP_ISP: In System Programming Mode Low: ISP mode HIGH: Normal Mode



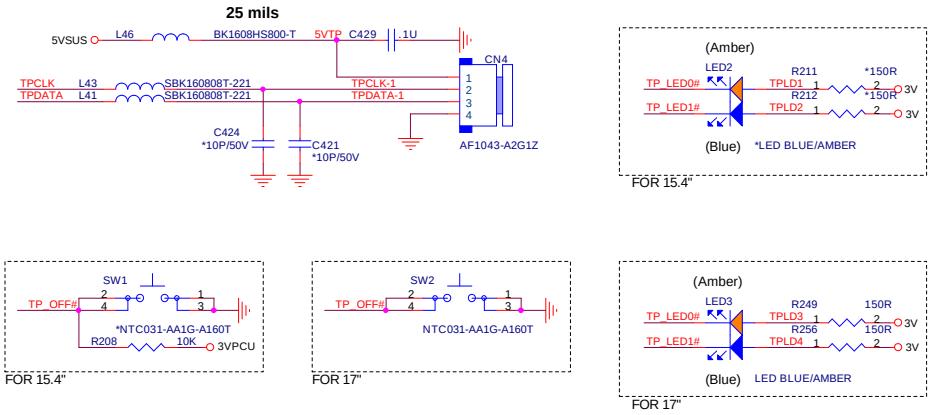
30

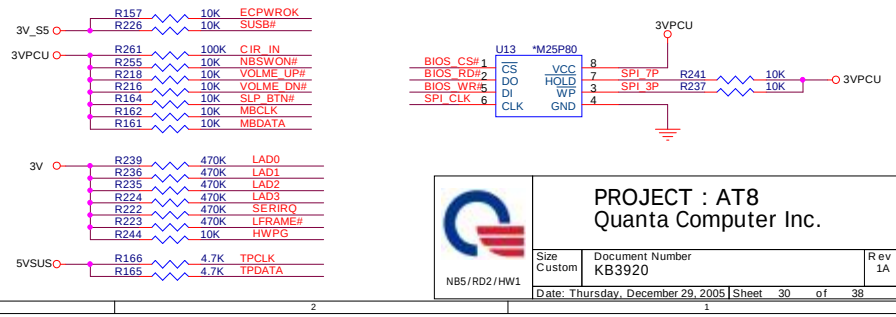
BIOS ROM



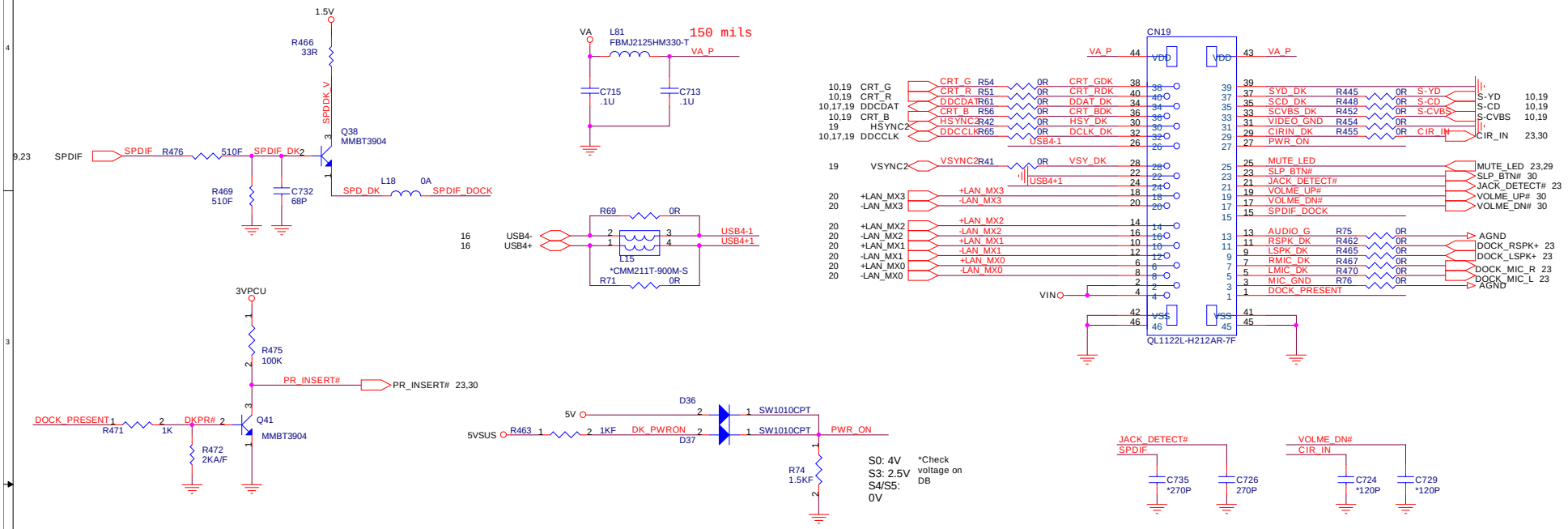
ROM CHIP P/N:AKE34ZAPK01

TOUCH PAD CONNECTOR

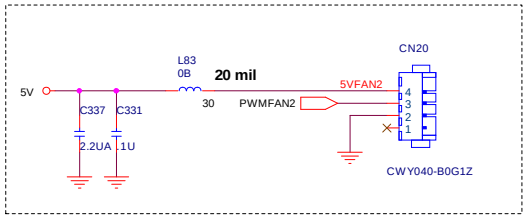




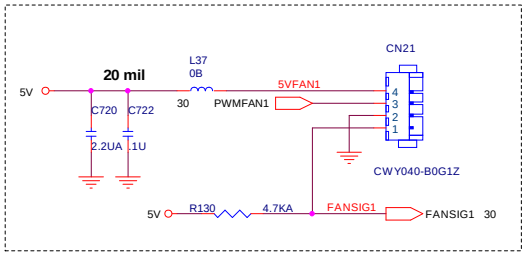
CABLE DOCK



FAN



FAN2 PWM CONNECTOR

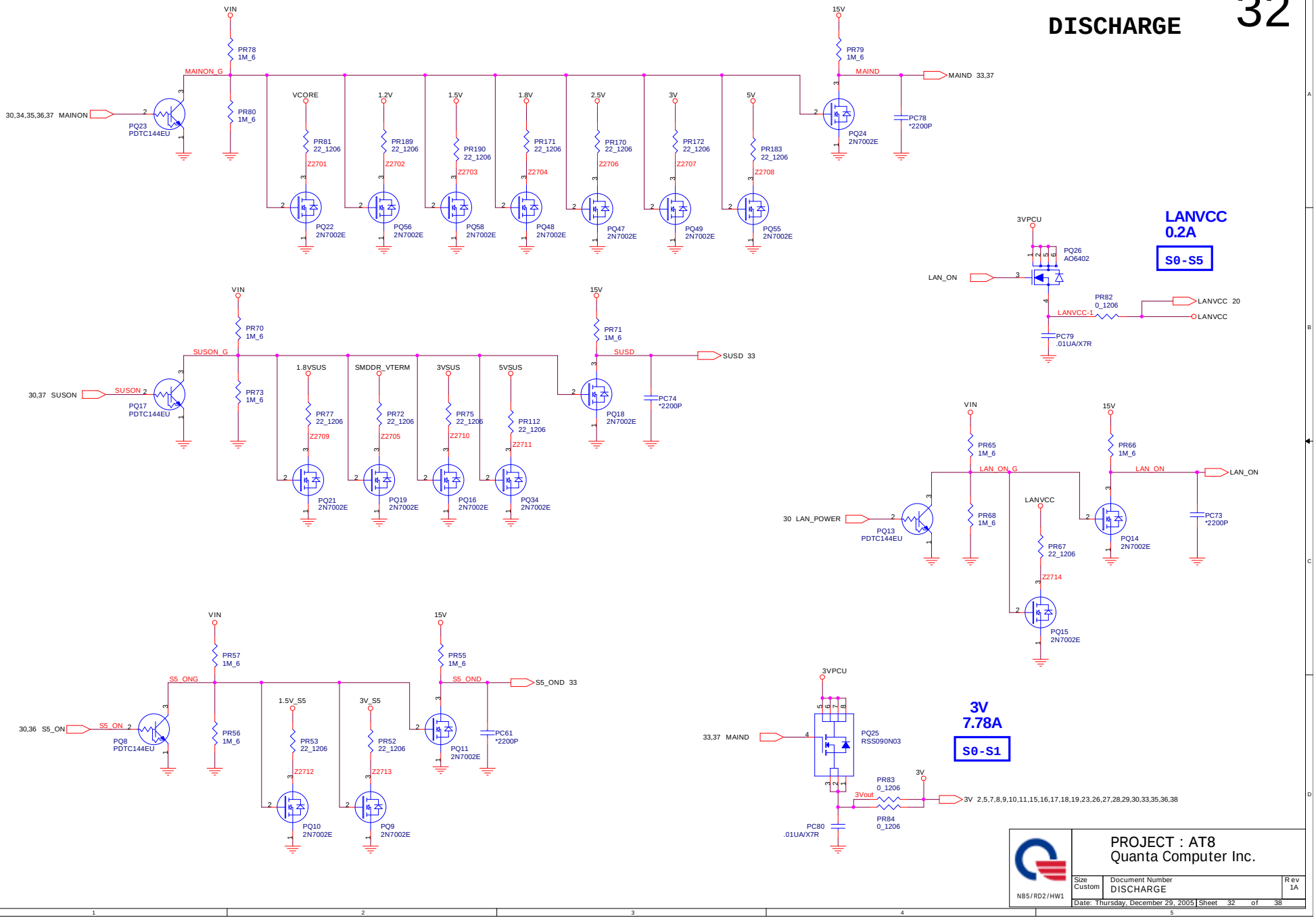


FAN1 PWM CONNECTOR

NB5/RD2/HW1	PROJECT : AT8 Quanta Computer Inc.	
Size: Custom	Document Number: CABLE DOCKING	Rev: 1A
Date: Thursday, December 29, 2005	Sheet 31 of 38	

DISCHARGE

32

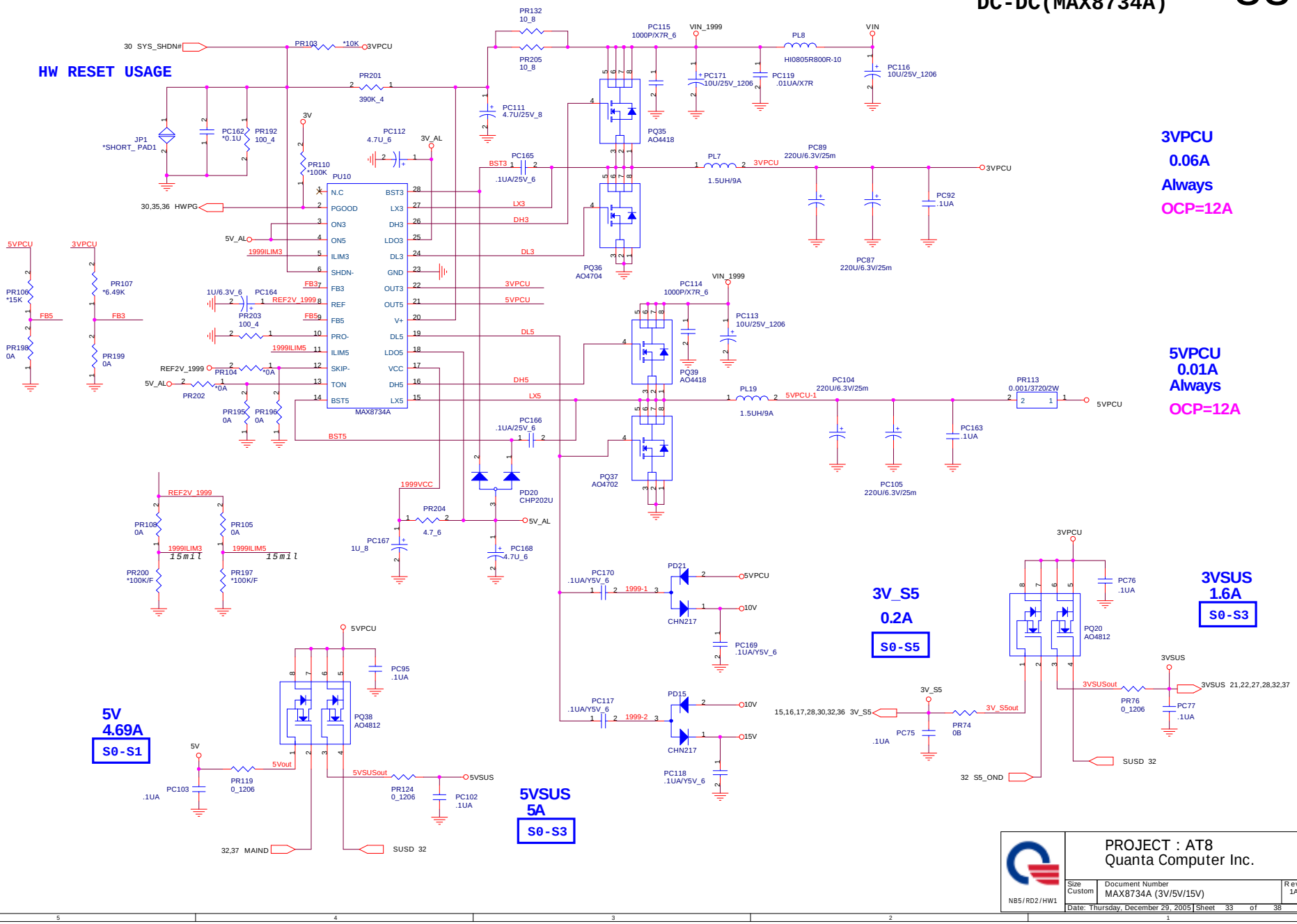


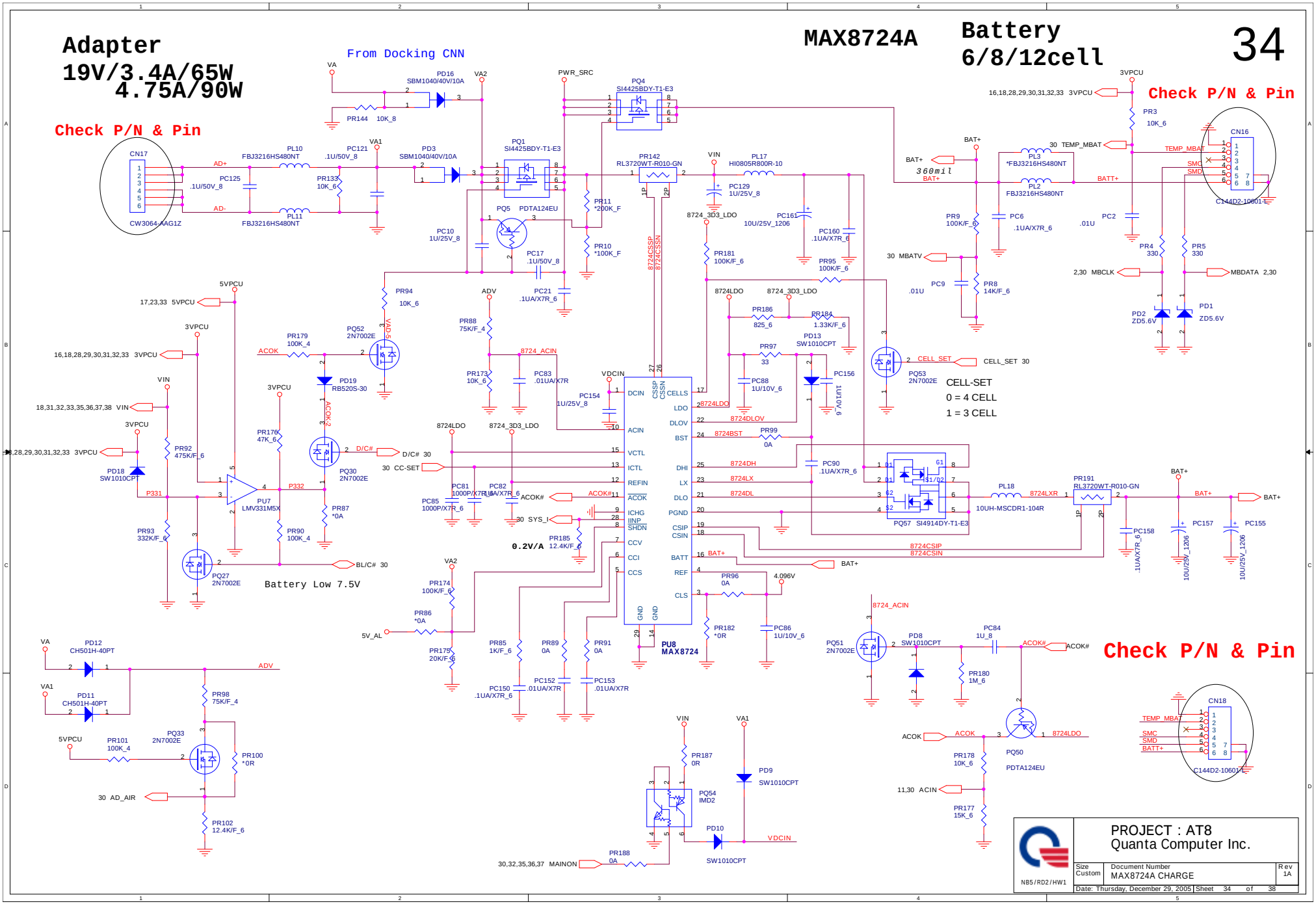
NB5/RD2/HW1

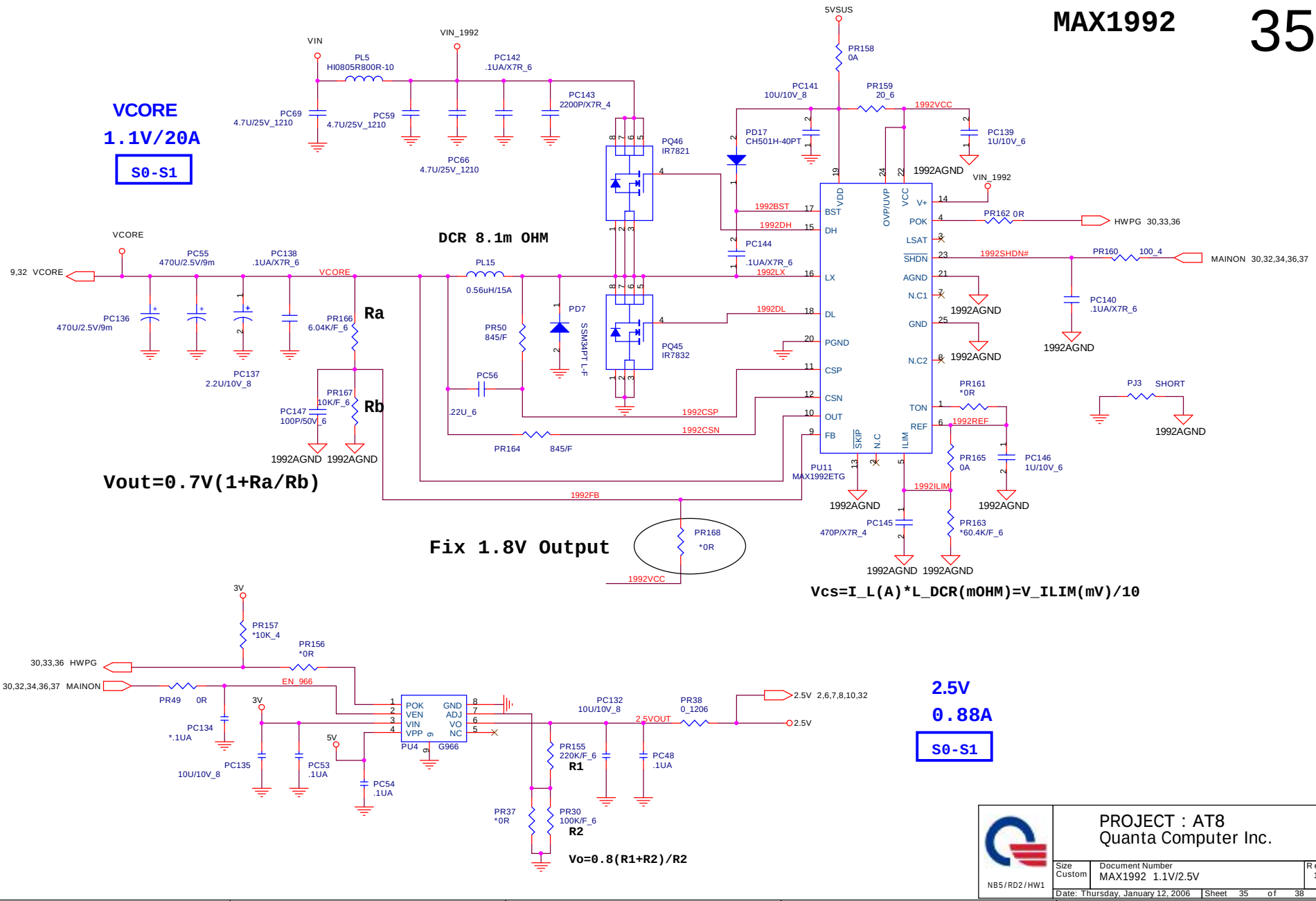
PROJECT : AT8
Quanta Computer Inc.

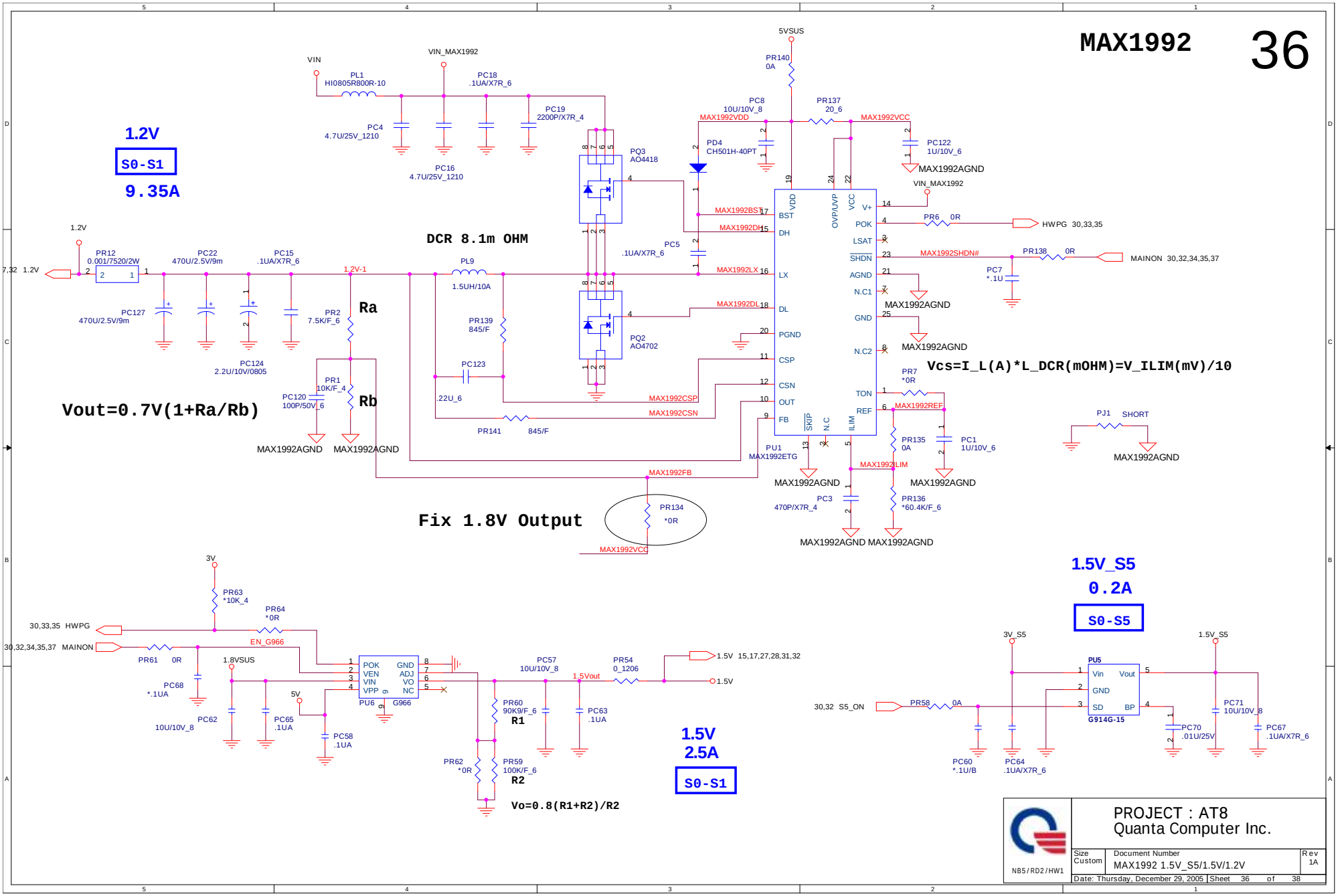
Size	Document Number	Rev
Custom	DISCHARGE	1A

Date: Thursday, December 29, 2005 | Sheet 32 of 38









1.8VSUS 9.1A
S0-S3

1.8 Volt +/-5%
Design Current:15.0A
OCP: Max. 18.0A

DCR 1.1m Ohms+-10%

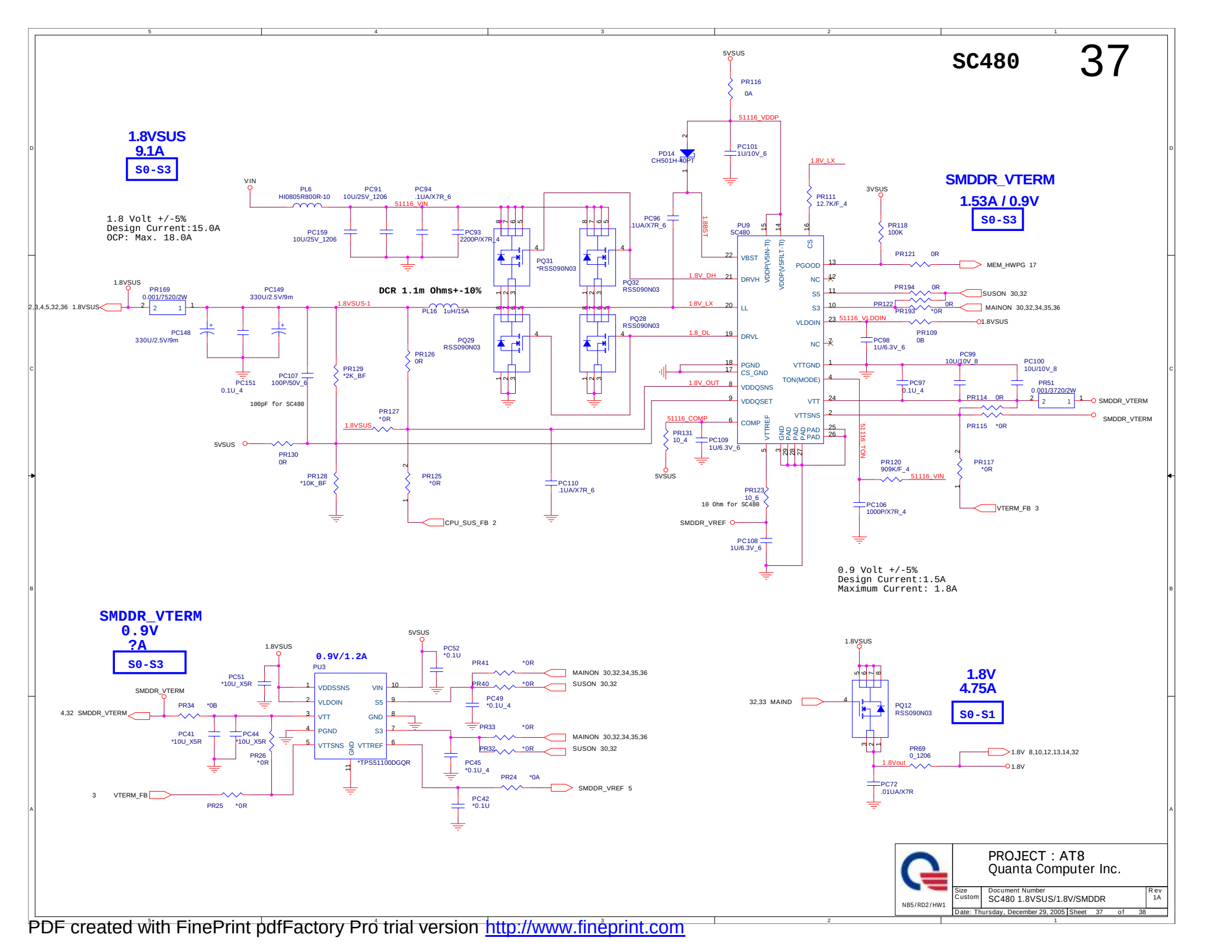
SMDDR_VTERM 1.53A / 0.9V
S0-S3

0.9 Volt +/-5%
Design Current:1.5A
Maximum Current: 1.8A

SMDDR_VTERM 0.9V ?A
S0-S3

0.9V/1.2A

1.8V 4.75A
S0-S1



PROJECT : AT8
Quanta Computer Inc.

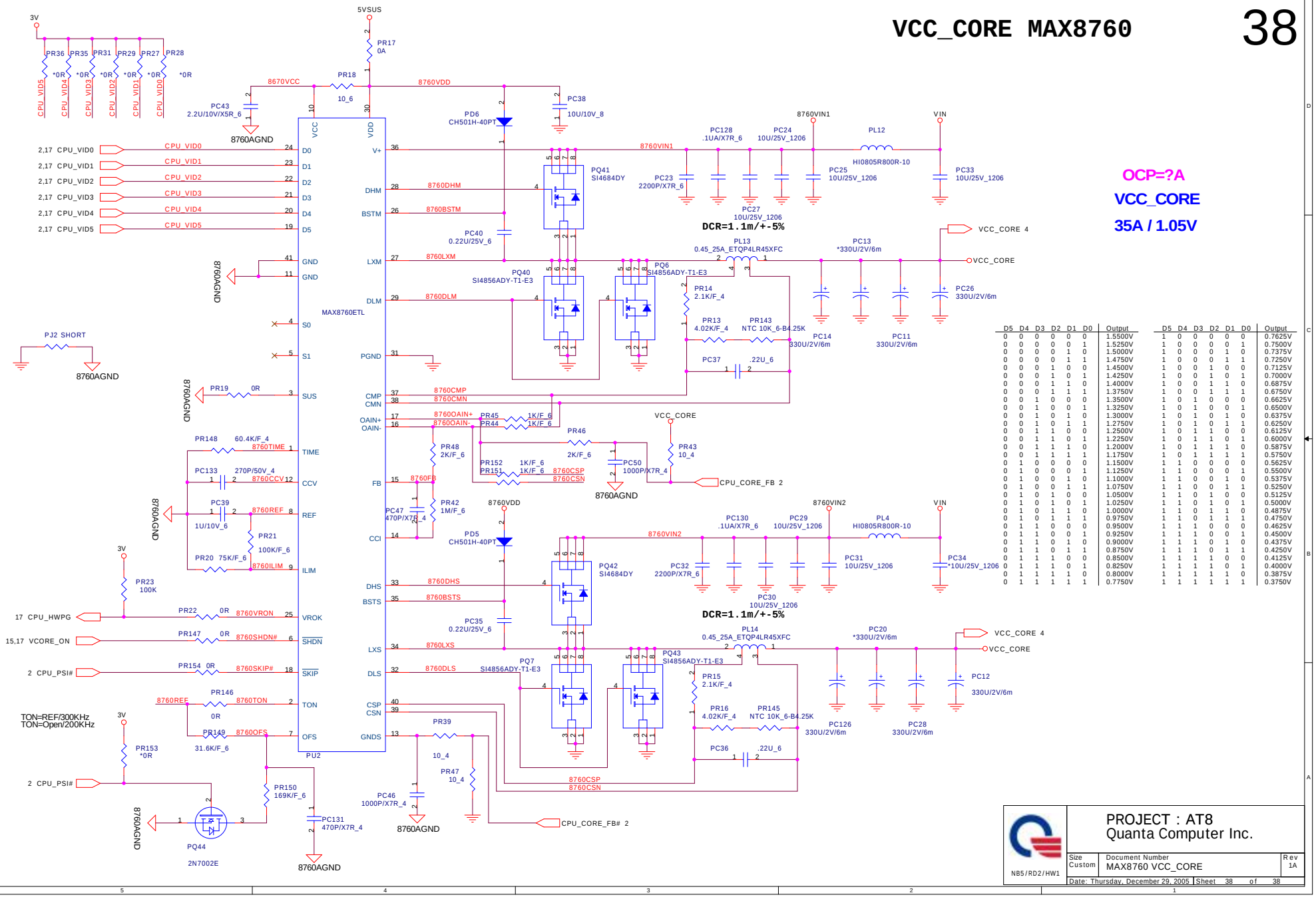
Size	Document Number	Rev
Custom	SC480 1.8VSUS/1.8V/SMDDR	1A

NB5/RD2/HW1

Date: Thursday, December 29, 2005 | Sheet 37 of 38

VCC_CORE MAX8760

38



D5	D4	D3	D2	D1	D0	Output
0	0	0	0	0	0	1.5500V
0	0	0	0	0	1	1.5250V
0	0	0	0	1	0	1.5000V
0	0	0	0	1	1	1.4750V
0	0	0	1	0	0	1.4500V
0	0	0	1	0	1	1.4250V
0	0	0	1	1	0	1.4000V
0	0	0	1	1	1	1.3750V
0	0	1	0	0	0	1.3500V
0	0	1	0	0	1	1.3250V
0	0	1	0	1	0	1.3000V
0	0	1	0	1	1	1.2750V
0	0	1	1	0	0	1.2500V
0	0	1	1	0	1	1.2250V
0	0	1	1	1	0	1.2000V
0	0	1	1	1	1	1.1750V
0	1	0	0	0	0	1.1500V
0	1	0	0	0	1	1.1250V
0	1	0	0	1	0	1.1000V
0	1	0	0	1	1	1.0750V
0	1	0	1	0	0	1.0500V
0	1	0	1	0	1	1.0250V
0	1	0	1	1	0	1.0000V
0	1	0	1	1	1	0.9750V
0	1	1	0	0	0	0.9500V
0	1	1	0	0	1	0.9250V
0	1	1	0	1	0	0.9000V
0	1	1	0	1	1	0.8750V
0	1	1	1	0	0	0.8500V
0	1	1	1	0	1	0.8250V
0	1	1	1	1	0	0.8000V
0	1	1	1	1	1	0.7750V

D5	D4	D3	D2	D1	D0	Output
1	0	0	0	0	0	0.7625V
1	0	0	0	0	1	0.7500V
1	0	0	0	1	0	0.7375V
1	0	0	0	1	1	0.7250V
1	0	0	1	0	0	0.7125V
1	0	0	1	0	1	0.7000V
1	0	0	1	1	0	0.6875V
1	0	0	1	1	1	0.6750V
1	0	1	0	0	0	0.6625V
1	0	1	0	0	1	0.6500V
1	0	1	0	1	0	0.6375V
1	0	1	0	1	1	0.6250V
1	0	1	1	0	0	0.6125V
1	0	1	1	0	1	0.6000V
1	0	1	1	1	0	0.5875V
1	0	1	1	1	1	0.5750V
1	1	0	0	0	0	0.5625V
1	1	0	0	0	1	0.5500V
1	1	0	0	1	0	0.5375V
1	1	0	0	1	1	0.5250V
1	1	0	1	0	0	0.5125V
1	1	0	1	0	1	0.5000V
1	1	0	1	1	0	0.4875V
1	1	0	1	1	1	0.4750V
1	1	1	0	0	0	0.4625V
1	1	1	0	0	1	0.4500V
1	1	1	0	1	0	0.4375V
1	1	1	0	1	1	0.4250V
1	1	1	1	0	0	0.4125V
1	1	1	1	0	1	0.4000V
1	1	1	1	1	0	0.3875V
1	1	1	1	1	1	0.3750V